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Aredia for osteosarcoma pain

Patients with osteolytic bone lesions (osteosarcoma patients) are often the most challenging pain-management cases of all. Most of these dogs present in unrelenting pain from the presence of the bone cancer itself. They are often large-breed dogs that in many instances have other very significant arthritic pain and myofascial pain present. In these patients, when amputation is not a consideration, this author utilizes multimodal options as extensively as possible and adds IV bisphosphonate pamidronate (Aredia). This medication, when administered in a slow IV infusion (1-2 mg/kg in 250 ml 0.9% NaCl over 2 hours), has the ability to block the pathologic osteolytic process of the cancer and result in significant and rapid pain reduction in the osteosarcoma patient. Generally, a response is expected within the first week of treatment. Pamidronate has afforded this author's practice a viable alternative to both amputation and radiation and has resulted in ***significant improvement*** not only in quality of life but also in additional length of life for osteosarcoma patients.

Kathy Mitchener, DVM, CVMA
81st AAHA Conf, 2014

INSIDE THIS ISSUE

Antiseizure activity of furosemide

Among the many purported neuroprotective effects of furosemide, it has been shown to suppress epileptiform activity, likely through neuronal ion changes. This effect may be of particular use in status epilepticus, where animal models and human studies seem to indicate a beneficial effect. As always, further research is needed before this can be a strong recommendation, but furosemide should be considered in refractory cases where standard therapies fail. The side effect of decreased intravascular volume and consequent diminished BP/perfusion should be weighed against any potential benefit. Salutary effects on ischemic and post-ictal neuronal tissue are also postulated, through a variety of complex mechanisms and eensy weensy ion gates.

Tony Johnson, DVM, Dip ACVECC
2014 VECCS Symp

Comparing milk replacers to dog milk

Results of this study suggested that currently available puppy milk replacers contained variable nutrient concentrations and were ***not close matches to dog milk.*** Many products had potentially serious problems such as inadequate calcium, insufficient calcium-to-phosphorus ratio, low caloric density, inappropriate feeding directions, and excessive lactose concentrations. All of these concerns could contribute to poor puppy growth and viability. It is also concerning that many manufacturers of the milk replacers chose to include standardized feeding directions on the basis of volume rather than adjusting for the caloric density of the individual products. Newborn puppies have been suggested to require 25 kcal/100 g of body weight/d; however, 100-g puppies fed according to the package directions for the 15 milk replacers tested would receive 12.3 to 40.5 kcal of metabolizable energy/d. Especially for novice puppy raisers, adherence to the feeding directions for some of the products could easily lead to substantial over- or underfeeding. Compounding the issue is that even though several package directions recommend weighing the puppies regularly, none provide guidelines on appropriate rates of weight gain to ensure adequate intake. In the meantime, dog owners and breeders should be counseled that not all milk replacers are the same and products with serious nutritional concerns should be avoided.

Cailin R. Heinze, VMD, MS et al.
JAVMA, Jun 15, 2014

An option for struggling pet owners to pay

Crowdsourcing. Owners have used crowdsourcing sites such as Gofundme (gofundme.com) to raise money for pet medical care. One person found a stray dog that was hit by a car and raised $6,000 to treat the dog's fractures on Gofundme.

Bakersfield Calif, Jun 8, 2014

Early signs of glaucoma

The Schirmer Tear Test is the first step of the ophthalmic TPR (tear Test, intraocular Pressure, stain Retention). The second step is to check the intraocular pressure. Many patients are not diagnosed with glaucoma until after an eye is enlarged and nonvisual. The key to making an early diagnosis of glaucoma in order to preserve vision is to recognize the ***early signs of the disease.*** Dogs with glaucoma often have early signs of the disease such as waking in the morning with a red eye and mild discharge but as the day passes the clinical signs abate. Once several more days pass with similar clinical signs, the owner may then present the dog to their veterinarian. Without an ocular TPR, a symptomatic diagnosis of conjunctivitis may be made and treatment with an antibiotic or antibiotic/steroid combination may be used. The owner will treat the eye and often clinical signs resolve with everyone thinking the disease resolved because of the prescribed therapy. However, missed pressure elevations lead to further ocular damage and eventual blindness. A Schirmer Tear Test to rule out keratoconjunctivitis sicca and a method of checking intraocular pressure must be used to rule out early glaucoma.

Bill Miller, DVM, MS, Dip ACVO
Music City Vet Conf, 03:13

Transfusions in cases of IMHA

Most patients with immune mediated hemolytic anemia (IMHA) present with severe anemia and 70%-90% of patients require blood transfusion to stabilize their packed cell volume and provide tissue oxygenation until the red blood cell destruction is controlled. Transfusions should be administered if the patient is clinical for their anemia. Cross matching and blood typing may be impossible due to auto-agglutination, in which case you should give them Dea 1.1 negative blood. In the past, practitioners have been concerned about blood transfusions potentially "fueling the fire" of hemolysis. However, studies have shown that administration of red blood cells has a favorable effect on survival and patients who receive transfusions have a statistically longer survival time than those who don't and the need for multiple transfusions is not a negative prognostic indicator.

Renee K. Fenty, DVM, Dip ACVECC
So Cal VMA Pulse, Jun 2014

Cell counts in Parvo dogs

Leukopenia results from suppression of leukocyte precursors following viral infection of the bone marrow, as well as sequestration of leukocytes in intestinal crypt necrosis. Leukopenia, however, occurs in only 50% of affected dogs, therefore, is not a sensitive or specific indicator of parvovirus in infected animals. A total white blood cell count of greater than 4,500 WBC/µL, lymphocyte count >1000/µL, monocyte count 150/µL within 24 hours of admission for dogs infected with parvoviral enteritis is positively correlated with survival. While infected animals are often evaluated for neutropenia, the absolute lymphocyte value of less than 1000 lymphocytes/µL within 48 hours of admission has been correlated to be a negative prognostic indicator in affected animals. Daily blood smears evaluating both neutrophils and lymphocytes can be helpful in gauging response to therapy and offer prognosis. Clinically, peripheral leukocyte numbers often increase at the same time that patients start appearing clinically better.

Elisa M. Mazzaferro, MS, DVM, PhD, Dip ACVECC
19th Int VECCS, 09:13

Plavix for ATE in cats

Clopidogrel (Plavix) is an antiplatelet drug and is another drug often used to prevent ATE in cats. This drug reduces platelet activation, reduces platelet degranulation, and inhibits modification of glycoprotein IIb/IIIa receptor which leads to reduced aggregation. Clopidogrel seems to be well tolerated in many cats, although foaming at the mouth or vomiting has been seen in some cats, and increased liver enzymes and bilirubin can also be seen with the drug. These authors prefer clopidogrel to aspirin as the latter has been associated with altered renal function, and this may be especially concerning in cats taking furosemide and ACE inhibitors. There is no routine monitoring of clotting times or any other blood tests for these drugs. Clopidogrel is supplied as 75 mg tablets and the proposed dose (pending further clinical experience) is 2-4 mg/kg/day (1/4 of a tablet, orally, once a day), although in cats less than 3-4 kg the drug should likely be compounded to avoid overdose.

Lisa M. Freeman, DVM, PhD and John E. Rush, DVM, MS
N Amer Vet Conf, 01:13

Urinary tract infections

Long-term prophylaxis can be implemented for patients at risk for recurrence. Prophylaxis (by definition) can occur only after the infection has been eradicated. The use of low doses of antimicrobials in the presence of bacteriuria is likely to lead to the generation of resistant organisms and is contraindicated. Thus, prophylactic antimicrobial therapy of UTIs is indicated for reinfection but not relapse (the latter suggests that the organism was never completely eradicated). The antimicrobial chosen for long-term prophylaxis should be both safe and inexpensive. Trimethoprim/sulfonamide combinations (monitor for immune-mediated reactions) and fluoroquinolones are examples. The dose generally can be reduced to 30% to 50% of the full dose. Despite this low dose, therapeutic concentrations of drugs are likely to be achieved in urine; in addition, subtherapeutic concentrations of drugs often are sufficiently inhibitory to prevent infection of the uroepithelium. The drug should be ***administered at night*** to maximize contact of the drug with the urinary

tract. Intermittent urine cultures (monthly) are indicated to detect breakthrough infections in animals receiving long-term antimicrobial prophylaxis. Negative cultures for 6-9 months or more may indicate that prophylaxis is no longer necessary.

Dawn Merton Boothe, DVM, PhD, Dip ACVIM
NY St VMA Vet Conf, May 2014

Reduced drug doses for Greyhounds

Studies comparing Greyhounds to non-sighthound dogs have documented Greyhounds have a significantly larger proportion of muscle mass and significantly smaller proportion of fat. Recent studies have documented that dose adjustments may be necessary for some drugs in Greyhounds due to altered drug distribution. Amikacin, an aminoglycoside antimicrobial, has a significantly smaller volume of distribution (Vd) in Greyhounds. The result of the smaller Vd is proportionally higher plasma concentrations despite administration of a similar dose, compared to non-sighthound dogs. Toxicity of aminoglycosides have been well correlated to total drug administered (as determined by the area under the plasma curve) and persistent drug concentrations (failure to maintain a drug-free interval). ***The current dose recommendation*** is to decrease the dose of amikacin from 15 mg/kg, IV & 20 mg/kg, SQ/IM, q24h to 10 mg/kg, IV and 15 mg/kg, SQ, q24h in Greyhounds. A similar dose reduction for gentamicin is also expected, for Greyhounds 6 mg/kg, IV, 9 mg/kg, SC/IM q24h. A similar difference in the disposition of propofol was noted with Greyhounds exhibiting a significantly smaller Vd and higher plasma concentrations. However, since propofol is typically administered "to effect," differences are typically not noted clinically.

Butch KuKanich, DVM, PhD, Dip ACVCP
AVMA Conf, 08:12

Use of epinephrine in CPR

There has been significant past controversy over the appropriate dosing of epinephrine. The so-called "standard dose," usually 0.01 mg/kg, has been compared to "high-dose" 0.1 mg/kg in a number of different trials. Human clinical trials have shown some improvements in initial resuscitation rates; however, this fails to translate into an improved survival, with patients receiving high dose epinephrine tending to have a higher in hospital mortality following successful resuscitation. One study demonstrated a poorer outcome with increasing cumulative doses of epinephrine, despite increased ROSC, and identified that survivors were more severely affected neurologically. In conclusion, epinephrine at a standard dose (0.01 mg/kg, IV or IO) is the recommended starting dose. In animals with prolonged CPR (>10 minutes), high dose (0.1 mg/kg) epinephrine may be considered although the evidence for this is weak. Vasopressin may be used as well, and in particular has theoretical benefits in the presence of severe metabolic acidosis.

Gareth J. Buckley, MA, VetMB, MRCVS, Dip ACVECC
19th Int VECCS Symp

Glue ear in the Cavalier King Charles Spaniel

A bulging pars flaccida can be present in the ears of normal dogs as well as in ears of dogs with otitis externa. In the Cavalier King Charles Spaniel (CKCS), however, it does appear that a bulging pars flaccida is indicative of a middle ear disease, specifically primary secretory otitis media. Primary secretory otitis media (PSOM) or "glue ear" is a disease described almost exclusively in the CKCS. Dogs with this condition may exhibit head and neck pain, "air" scratching, neurological signs (facial paralysis, head tilt, vestibular signs), and hearing loss. The following are the conclusions made based on the results of the author's study. PSOM is common disease in the CKCS. It is uncommon to be associated with infection and rare to be associated with bulla changes. Clinical signs may resolve post-myringotomy and middle ear flush, albeit temporarily. Lack of mucus removed from middle ear does not equate to lack of disease. A large bulging pars flaccida indicates PSOM in the CKCS and there is no need for further testing; however, the majority of CKCS with PSOM had a flat pars flaccida. Current treatment of PSOM is removal of the mucus via a deep ear flushing of the middle ear. Culture and cytology of the mucoid exudate is usually negative; however, is still recommended. CKCS may require repeated middle ear flushes to remove the mucus from the middle ear, since the mucus may recur. This is not necessarily unexpected, since the cause of this disease has yet to be identified.

Lynette K. Cole, DVM, MS, Dip ACVD
AVMA Conf 08:12

Sedation of the critical exotic patient

For many exotic patients, stress of handling (e.g. thorough examination, attempting vascular access) can cause rapid decompensation and death. Correct identification of these patients is enhanced with clinical experience, but common examples include rabbits in GI distress and rats in extreme respiratory distress (In contrast, the critical ferret appears much more likely to tolerate handling, even when extremely ill). For these patients, low dose sedation can reduce anxiety and provide adequate "disconnect" to allow safe handling, without decompensating the ongoing medical condition. Sedation drugs of choice are midazolam at 0.10-0.3 mg/kg combined with an opioid, for example butorphanol, at 0.1-0.2 mg/kg. Begin with a low dosage and increase slightly as required. General anesthesia for the same purpose is not recommended, and increases patient risk.

Angela M. Lennox, DVM, Dip ABVP
18th Int VECCS Symp

Multiple vaccines at the same time

FICTION: Size of the patient is **not** a consideration when there is a need to administer multiple vaccines at the same time. FACT: Doing so may pose increased risk for an acute-onset reaction (hypersensitivity)...especially small breed dogs receiving multiple vaccines at the same appointment. Giving multiple doses of vaccine at the same appointment (especially among small breed dogs) has been shown to be associated with increased risk of causing an acute vaccine adverse event. Today, it is recommended that, especially in small breed dogs, that veterinarians consider delaying administration of NON-core vaccine until 2 to 4 weeks after completion of the CORE vaccines. Then, administration of any NON-core vaccine should be limited to those patients having a reasonable risk of exposure to the pathogen.

Richard B. Ford, DVM, MS, Dip ACVIM
Music City Vet Conf, 2014

Proper dosing of fish oil

Omega-3 fatty acids have been shown to have anti-arrhythmic effects in a number of species. Omega-3 fatty acids can alter immune function which may contribute to the cardiovascular benefits of omega-3 fatty acids. Omega-3 fatty acids reduce platelet aggregation which might be particularly useful in cats with cardiac disease due to increased platelet aggregability. While the optimal dose of omega-3 fatty acids for dogs and cats are not yet known, a currently recommend dosage scheme of 40 mg/kg EPA and 25 mg/kg DHA in small animals with CHF. Fish oil supplements vary widely in the amount of EPA and DHA they contain so it is important to know the exact amount in supplements recommended. Capsules that contain approximately 180 mg EPA and 120 mg DHA can be purchased over the counter at most human pharmacies and can be administered at a dose of ***1 capsule per 10 pounds body weight.*** Fish oil should contain vitamin E as an antioxidant, but supplements which contain other nutrients are not recommended to avoid toxicities. Cod liver oil and flax oil should not be used as they are not true sources of omega-3 fatty acids in small animals.

Daniel L. Chan, DVM, Dip ACVECC
19th Int VECCS Conf

Dexdomitor, micro doses

Many practitioners do NOT like Dexdomitor. This author doesn't either at the labeled dose, but LOVES it at micro doses. The author usually uses 2.5 to 10 µg/kg, IM in both dogs and cats as a premed. Dexdomitor can also be used intra-op at a 0.5-1 µg/kg, IV dose and as a CRI. Alpha-2 agonists are excellent analgesics in addition to their sedative and muscle relaxation properties. They can also be reversed in case there are problems during their use.

Andrew Claude, DVM, Dip ACVA
Music City Vet Conf, 03:13

Right time to extubate

The proper time to extubate is often based on a widespread misconception, sometimes called the "two swallow" rule. This is a very unfortunate urban legend that can lead patients to serious trouble. "Two swallows" ***may not mean that the patient is alert enough*** to continue swallowing and breathing efficiently on its own. The more appropriate time to extubate is when a patient is alert, preferably has lifted its head up at least once, and begins to chew. The next challenge it to pull the tube before the patient chews it in half. Ideally, each patient recovering from anesthesia and/or surgery should be under direct supervision of a technician until extubation.

Phil Zeltzman, DVM, Dip ACVS, CVJ
Vet Pract News, 26:4, 2014

Elimination of oral malodor

Analysis of the results of the present study supported the contention that professional dental cleaning combined with daily topical administration of an active gel containing antimicrobials with specific antioxidant combinations (www.periosciences.com) can be used to reduce halitosis and maintain acceptable breath in dogs.

Samuel B. Low, DDS, MEd et al.
Am J Vet Res, Jul 2014

Inappropriate elimination, eliminating the odor

The smell of urine will attract the cat so it is imperative that it be removed from carpet, other flooring, furniture, and bedding. If the item is washable, do so with hot water and bleach if possible. It is important to find all of the areas in carpet; this can be accomplished with the use of a black light. Most owners find more areas than they were aware of. Treating the pad is paramount. To do so, pour 1/2 cup of water on the area and spray the carpet with **Zero Odor Pet** (zeroodorpet.com); alternatively, pour 1/2 cup of water on the area then inject (with a syringe and needle) about 5 ml of Zero Odor Pet into the pad. This is the most effective odor removal product that the author has used. Zero Odor Pet can also be used in and around the litter box to remove lingering odors. The pheromone **Feliway** can be used to mark the cat's "good zones." As a rule, cats will not urinate or defecate in their "good zones." It should be sprayed on the locations of inappropriate elimination; alternatively, the Feliway Diffuser can be used when many areas need to be treated in the same room.

Gary D. Norsworthy, DVM, Dip ABVP
Music City Vet Conf, 03:12