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"Pearls" of Veterinary Medicine

THE CAPSULE REPORT® FOR VETERINARIANS

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Volume 34, Number 5 August 2015

Recurrent UTI

Culture a urine sample collected by cystocentesis 3-5 days following initiation of antimicrobial therapy. Performing urine culture at this time is designed to recognize treatment failure so that a prolonged period of unnecessary and expensive antimicrobial therapy can be avoided. If bacterial growth is detected 3-5 days after initiating therapy, treatment should be reevaluated. If the urine is sterile 3-5 days after initiating therapy, treatment should be continued. Data concerning the minimum and optimum duration of antimicrobial therapy for UTIs are not available. It is recommended that acute, uncomplicated UTIs and some reinfections be treated for a period of 10-14 days whereas chronic or persistent UTI should be treated for at least 4-6 weeks. Some infections involving the kidney(s) and prostate gland may require even more prolonged therapy. The client should be informed that ***amelioration of clinical signs is not a reliable indicator of successful eradication*** of UTI, and medication should be administered throughout the recommended treatment interval. Urine may be cultured immediately before discontinuing therapy to ensure that infection has been eradicated and superinfection has not developed. Bacterial culture should then be performed on urine obtained by cystocentesis 7-10 days after completing therapy to detect relapses. Urine should also be cultured approximately 1, 2, 3, 6, and 12 months after terminating therapy to detect reinfections or delayed relapses.

Sheri J. Ross, DVM, PhD, Dip ACVIM
Music City Vet Conf, 02:14

Valuable Information Inside

Hypertrophic cardiomyopathy, cat

Treatment of hypertrophic cardiomyopathy is directed at a) decreasing the heart rate to allow for maximum filling time, decreasing the left ventricular outflow tract gradient if systolic anterior motion of the mitral valve (SAM) is present and b) controlling CHF if present. The optimal therapy for asymptomatic cats is uncertain. In general, mildly affected cats are not treated. Cats that are tachycardic (>220) and/or have outflow obstruction (SAM) on echo should probably be treated. The most commonly recommended treatment is a beta blocker (atenolol, B_1 selective). Atenolol (approximately 3 mg/kg, PO, BID) should decrease heart rate and left ventricular outflow tract gradient if SAM is present. However, atenolol should never be started in cats with congestive heart failure. Supportive treatment for CHF should be given to these cats and once pulmonary edema is resolved (furosemide, enalapril) atenolol may be started.

Kathryn M. Meurs, DVM, PhD, Dip ACVIM
AVMA Conf, 07:13

IM pins

Two different point types are available. A chisel, also called a diamond point (2-sided cutting edge), is effective in cutting through dense cortical bone without generating excessive heat. However, chisel point pins can also be very difficult to initially start in dense bone without slipping off the desired entrance point. A trocar point (triple cutting edge) is designed to easily cut through cancellous bone, and the sharp point tends to "stay-put" when the pin is initially inserted. A double armed, trocar typed pin design is the most common form of IM pins used in small animal medicine. The shaft of IM pins are generally smooth, but can be purchased with negative profile threads (threads cut into the pin-reducing its diameter) near the end of the pin. **Threaded-end IM pins offer no advantage to a smooth pin.** Studies have shown that negative threaded profile pins have no better holding power in cancellous bone compared to smooth pins. In addition, the junction of the thread and smooth shaft of the pin creates a "stress concentrator," predisposing the pin to bend or break at that junction.

Robert M. Radasch, DVM, MS, Dip ACVS
N Amer Vet Conf, 2015

Cataract prevention

Ocu-GLO, manufactured by Animal HealthQuest and distributed by Animal Necessity is a product devel-

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oped by veterinary ophthalmologists and contains 12 natural antioxidants combined in a capsule form. Many claims are anecdotal by clients. In this case, however, the basis for the efficacy of the individual components is well documented in scientific and refereed journals. They do not claim the 'miracles' some other products claim but this product is promoted to possibly ***slow the progression*** of degenerative eye disease including cataracts. Ocu-GLO (www.ocuglo.com) is now recommended by many veterinary ophthalmologists.

Kerry L. Ketring, DVM. Dip ACVO
West Vet Conf, 02:13

Using Temaril-P in atopy

Some dogs may require low-dose maintenance steroids with their immunotherapy to remain comfortable. This author likes to start with Temaril-P, a tablet containing 5 mg of the antihistamine trimeprazine and 2 mg prednisolone. This drug seems to be very effective in most patients, allowing us to keep the total steroid dose low. It is important to try to use this drug and steroids in general in bursts and to stop often to see how the animal will do without it. For long-term steroid use, the following calculation has been very helpful. The body weight in lbs is multiplied by 15 (if kg, by 30); the resulting number is the mg of prednisone or prednisolone that the dog can take annually. A 20 lb dog would take 300 mg prednisolone per year, or 1 tablet of Temaril-P every other day. This dose, based on the author's experience, has been least likely to cause problems. If this dose is exceeded, the likelihood of problems may be increased and another approach should be considered.

Valorie A. Fadok, DVM, PhD, Dip ACVD
82nd AAHA Conf, 2015

Hypercalcemia in the cat

QUESTION. "I just discovered a 12.8 mg/dl total calcium (10.2 mg/dl is upper limit of reference range for my laboratory) on blood test results taken during a wellness exam from what I thought was a reasonably healthy middle-aged cat. All of the other biochemical tests were normal as was the CBC. How concerned should I be that this cat has malignancy- associated hypercalcemia (MAH)?" ANSWER. We are always concerned about the possibility for malignancy as the cause of hypercalcemia in both dogs and cats, but MAH is much less common in the cat compared to the dog (it is the number one cause of pathological hypercalcemia in the dog). Based on serum total calcium, MAH is 3rd in frequency behind idiopathic hypercalcemia (IHC) and CKD. Patients with MAH are usually "sick" as it takes a reasonably large tumor burden to synthesize the compounds (especially PTHrP) that result in hypercalcemia. So it seems unlikely for this cat to have MAH especially if the hypercalcemia persists for a longer period of time without the cat showing more clinical signs. The less sick the cat is in the face of persistent hypercalcemia, the more the likelihood for the diagnosis to be that of IHC or primary hyperparathyroidism. Remember, ionized calcium should always be performed first to confirm the diagnosis of clinically-relevant hypercalcemia.

Dennis J. Chew, DVM, Dip ACVIM
NY ST VMA Spr Conf, 05:14

Benefits of long-term NSAIDs

Controlling arthritic pain allows a number of improvements to take place. NASIDs are one of the best ways to control pain and enable muscle to be built back up, which gives an animal greater control of the joints, resulting in further decrease in pain. The combined antiinflammatory and analgesic effects of NSAIDs allow ongoing activity which perpetuates muscle mass and helps the joints share the load of the animal's weight. From a pain-management perspective, the authors believe that patients that are on chronic, daily NSAID use fare much better than the patients whose owners try to chase pain by giving NSAIDs as needed, or on tough days. When you think about the pain pathway and what happens in the spinal cord during chronic pain, it is easy to see that a chronic situation can turn into a situation where we have maladaptive pain. There are actually changes in the expressions of genes during maladaptive pain situations. We need to do everything we can to keep the pain at a minimum and this is where chronic NSAID use in arthritis should be our first line. After 2-3 weeks at the label-recommended dose, the dose can be adjusted downward to minimize the medication needed to keep the pain under control and prevent maladaptive pain conditions, or persistent pain that tends to be out of proportion to actual tissue damage.

Duncan X. Lascelles, BSc, BVSc and Julie Meadows, DVM
Vet Pract News, Jul 2015

Juvenile cellulitis vs, demodicosis

In young dogs with suspected juvenile cellulitis, ***be sure and scrape for Demodex species mites first*** before starting the traditional corticosteroid and antibiotic therapy used for suspected juvenile cellulitis. Both diseases may result in lymphadenopathy, deep pyoderma and swelling of the periocular area and muzzle. A mistake would be to not check for *Demodex* species mites and start treatment because of the above clinical signs in a young dog. Scrapings take only a few seconds and can make the difference between diagnosing the correct disease or, in the case of demodicosis, perpetuating a potentially fatal disease.

Alice M. Jeromin, RPh, DVM, Dip ACVD
DVM News Mag, Jun 2015

Complicated UTI

Drugs or nutraceutical products that enhance polysulfated glycosaminoglycan synthesis (e.g., ADEQUAN, pentosan polysulfate, glucosamine, chondroitin sulfate) might be considered for patients with

complicated UTI. Such materials may cover or help repair the uroepithelium, thus decreasing bacterial adherence. Probiotics might also be considered for their ability to potentially replace emerging resistant populations in the gastrointestinal tract with "good" bacteria. Note that many probiotics are characterized by poor quality; accordingly, attention should be made to stick with a brand name product. Doses should be in terms of billions in order to assure colonization of the gastrointestinal tract. In general, target organisms should include lactobacilli, Bifidobacterium, enterococci, streptococci and others.

Dawn Merton Boothe, DVM, PhD, Dip ACVIM, Dip ACVCP
NY St Spr Vet Conf, 05:14

Magic and myth of opioids

Magic: Most of the opioids are very potent analgesic drugs. Magic: The opioids can be administered by a wide variety of routes including IV (as boluses or infusions), IM, SQ, PO, transdermally, intra-articularly and perineurally as part of local block. Myth: The adverse effects of opioids preclude their use in many patients. Not true! The primary adverse effects of the opioids include nausea, vomiting, slowing of GI motility, constipation, dysphoria, pruritus and respiratory depression. The actual ***incidence of clinically significant adverse effects is highly overstated***. Nausea and vomiting are common but short-lived and not likely to occur in painful patients. Thus, patients premedicated with opioids are likely to vomit but patients treated with opioids post-operatively or post-trauma are highly unlikely to vomit. Slowing of GI motility may occur, but slowed motility is not the same as ileus and the occurrence of ileus is rare. Furthermore, moderate to profound pain causes sympathetic overdrive, which can itself cause slowing of GI motility. Constipation may occur with opioids used for chronic pain but unlikely to occur with acute use. If using opioids for chronic pain, increase the fiber in the patient's diet.

Tamara L Grubb, DVM, PhD, Dip ACVA
West Vet Conf, 02:13

Chronic kidney disease and gastrin

Cats with CKD have been shown to have elevated concentrations of gastrin that increase with the severity of renal failure, but the relationship between gastrin, gastric acid secretion, and gastric pathology has not been fully described. In humans and dogs, gastrin is excreted by the kidneys, and it is hypothesized that as renal function declines, hypergastrinemia develops, resulting in gastric hyperacidity. The exact role of hypergastrinemia in contributing to gastric hyperacidity and/or gastric lesions in cats with CKD is still unclear. Thus there is very little available evidence on which to base recommendations for the use of acid-reducing medications such as H2 blockers, proton pump inhibitors in cats with uremia. Limiting gastric acidity with the use of H2 blockers or proton pump inhibitors such as famotidine or omeprazole respectively anecdotally appears to ***palliate inappetence in some CKD patients*** (Grade 4), however,both the degree of hyperacidity present in CKD and the efficacy of these medications for management of cats with CKD remains unproven. Recent studies of the effect of omeprazole on the gastric pH in normal cats indicates that it is superior to famotidine in its ability to inhibit acid production at 1 mg/kg twice daily (Grade I).

Jessica Quimby, DVM, PhD, Dip ACVIM
ACVIM 2015, Jun 2015

Analgesia in the cat

Having identified degenerative joint disease (DJD), the next step is to treat the patient. Three treatment options are readily apparent: NSAIDs, Adequan and nutraceuticals. All three can be implemented into a multimodal treatment protocol if desired. Although meloxicam is restricted to one-time use in the US, it has been approved in other countries for an unlimited time at 0.05 mg/kg/day. Robenacoxib, can be given for up to 6 consecutive days. Adequan is not approved for use in the cat; however, there is considerable anecdotal support for its use in the cat with musculoskeletal compromise. A study has been reported wherein a one-time SQ dose of Adequan was observed to 'find its way' into the cartilage matrix. It is noted that this was not a safety study, and not an efficacy or dose titration study. It simply demonstrated that the active agent, when administered SQ does penetrate joint tissues. The use of Adequan in cats is considered off-label. A variety of nutraceutical offerings are available for cats (as well as dogs), many of which have little-to-no In Vivo efficacy support. Owing to the great diversity of nutraceutical offerings, efficacy and safety profiles, one is well advised to recommend a given product only after close scrutiny.

Steven M. Fox, MS, DVM, MBA, PhD
West Vet Conf, 02:13

NO-nos in treating epilepsy

Some things that are often considered "no-nos" in canine epilepsy management are the following: 1) using oral valium to try to control seizures in dogs 2) settling on some arbitrary number of "acceptable" seizures (like one per month) before starting therapy 3) using rectal midazolam to try to control seizures 4) refusing to use "new" drugs due to unfamiliarity with the drugs and fear of failure and 5) diagnosing hypothyroidism in a patient after the patient has been placed on a drug known to alter thyroid hormone levels.

C.W. Dewey, DVM, MS and P.J. Early, DVM
NY ST VMA Spr Conf, 05:14

Dosage of probiotics

Side effects of probiotics are rarely reported, as the strains commonly used are part of the normal commensal flora. Probiotics should be used cautiously in severely immunocompromised patients. A substantial

percentage of orally administered probiotic bacteria will be lost through competitive exclusion by the highly complex resident microbiota. Therefore, probiotics need to be administered at high doses. Even then, probiotics will represent only a minor fraction of the total microbiota. For dogs and cats, it is difficult to provide a proper dosage for probiotics as no dose-response studies have been performed in clinical patients. Currently, this author is extrapolating information from human studies to dogs and cats. Doses between 1 x 10^8 and 4.5 x 10^{11} colony forming units (cfu) of bacteria have demonstrated clinical benefits. Antibiotics and probiotics are often prescribed concurrently. Probiotic strains can be either susceptible or resistant to the administered antibiotics. Generally, *Enterococcus* spp. and *Bifidobacterium* spp. are typically resistant to commonly used antibiotics such as tylosin and metronidazole. Therefore, in most cases no interaction between concurrent use of probiotics and antibiotics is to be expected.

Jan S. Suchodolski, MedVet, DrMedVet, PhD, Dip ACVM
West Vet Conf, 02:13

Predicting elective C-section

If vaginal cytology is performed until the diestrual shift is observed, a retrospective analysis of the date of the LH surge (7-10 days previously), ovulation and ova maturation (approximately 24-48 hours after the LH surge), and the fertile period (approximately 3-6 days after the LH surge) can be obtained. It is the least expensive way to perform ovulation timing, albeit retrospectively, and can be useful if evaluation of gestational age becomes important, as parturition (C-section) should occur 56-58 days from the day of the diestrual shift.

Autumn P. Davidson, DVM, MS, Dip ACVIM
NAVC Clin Brf, May 2015

Ponazuril for coccidiosis

Sulfadimethoxine (Albon) is the only drug approved for treatment of coccidiosis in dogs and cats. This drug is coccidiostatic and requires a prolonged duration of administration. Recently the use of ponazuril (toltrazuril sulfone) has gained popularity for treatment of coccidiosis in dogs and cats. Ponazuril is available in the U.S. in paste form (Marquis paste, Bayer Animal Health) as a treatment for *Sarcocystis neurona* in horses. A recent study examined the efficacy of treatment with ponazuril paste at each of three dosages in shelter-housed dogs and cats with confirmed coccidiosis. Dogs and cats treated with 50 mg/kg, q24h, for 3 days showed the greatest reduction in oocyst counts. The treatment protocol was associated with a 92.2% clearance of infection in dogs and 87.5% in cats. Animals with high pre-treatment oocyst counts were more likely to remain infected, many of which cleared the infection with a second treatment course. Due to prolonged infectivity of *Cystoisospora* spp. oocysts, environmental decontamination requires contaminated surfaces to be left in contact with 10% ammonia for at least 10 min or steam cleaned. Bathing infected animals may reduce oocyst contamination of the hair coat. For dilution of Marquis paste, add 20 mL of water to 10 ml (=10 mg) of Marquis paste (15% ponazuril) to achieve a final solution of approximately 50 mg/ml. Mixture does not need to be refrigerated. Shake well before dosing; dispose of after 30 days. Alternatively ponazuril can be commercially compounded.

Jody L. Gookin, DVM, PhD, Dip ACVIM
ACVIM For, Jun 2015

Anesthesia complication

Arterial hypotension is one of the most common anesthetic complications. Arterial hypotension occurs when the mean arterial pressure (MAP) is <60 mmHg or the systolic blood pressure is <80 mmHg (using Doppler) in dogs. In cats, there is an underestimation of the true systolic blood pressure using the Doppler technique. As a result, the author considers hypotension in these animals as systolic blood pressure <60 mmHg. It may be manifested as weak peripheral pulses. However, a strong peripheral pulse ***does not guarantee a normal MAP***. The pulse felt by the anesthetist is the difference between the systolic and diastolic pressures. A large difference between the two pressures will result in a very strong pulse and yet the MAP may be low. A helpful guide in the decision making is the use of an indirect or direct blood pressure monitor. It is important to maintain a normal MAP to ensure perfusion to the vital organs.

Luisito S. Pablo, DVM, MS, Dip ACVAA
NY ST VMA Spr Conf, 05:14

Mushroom poisoning

Because the availability of specific diagnostic testing or the aid of a mycologist are often limited and the effects of poisoning vary from gastroenteritis to organ failure, mushroom exposures are best approached with appropriate decontamination, symptomatic and supportive care, and hepatoprotectants. In these cases (i.e., signs are suggestive of muscarinic receptor stimulation), a test dose of atropine (0.02 mg/kg, IV) can provide valuable diagnostic information. If, after the test, mydriasis, tachycardia, and a dramatic cessation in salivation occur, it is unlikely the patient is in muscarinic overstimulation (or acetyl-cholinesterase inhibition), and additional atropine is not indicated. If no appreciable anticholinergic signs occur, muscarinic overstimulation is likely, and ***large doses of atropine*** (0.1-0.5 mg/kg) may be therapeutic.

Ahna Brutlag, DVM, MS, Dip ABT, DipABVT
NAVC Clin Brf, 12:3

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