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"Pearls" of Veterinary Medicine

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Cat transfusions using canine blood

In an emergency, can you turn to your canine blood stores for a cat that needs a transfusion? Xenotransfusion has been documented in the veterinary literature since the 1960s and is still practiced in some countries. There are four studies and one case report about the use of canine blood for transfusions given to cats (62 cats total). In most instances, the transfusions were well-tolerated, indicating that cats do not have naturally occurring antibodies against canine RBCs. Mild transfusion reactions included tachypnea and pyrexia as well as icterus in the week after the transfusion. Repeated transfusions administered >7 days after the initial transfusion resulted in severe transfusion reactions. In addition, the researchers found that canine red blood cells have a much shorter half-life (<4 days) when given to feline patients. ***Take- home message***: Canine whole blood or packed red blood cells should not be used for feline transfusion as standard practice. Xenotransfusion may be considered in specific circumstances if a compatible feline blood or hemoglobin-based oxygen carrier solution is not available and if the cat has never had xenotransfusion before. A frank discussion with the owners about the risks and benefits is imperative.

C. Bovens and T. Gruffydd-Jones
Vet Med, Feb 2014

INSIDE THIS ISSUE

Long-term use of NSAIDS IN OA

A number of lines of evidence suggest potential theoretical benefits of continuous versus intermittent NSAID analgesic therapy in OA. A recent review was performed of veterinary clinical studies aimed to collate all the information on long-term (defined as greater than 28 days) NSAID therapy and evaluate the evidence for the safety and efficacy of long-term NSAID use for the treatment of osteoarthritis in dogs. In addition, secondary aims were to evaluate the evidence for progressive decreases in pain, or progressive tolerance (increase in pain) over time; to evaluate the evidence for altered disease progression with long-term continuous use; and to evaluate the evidence for an increase (or decrease) in the incidence of adverse events with long-term NSAID use. Although not all the questions could be answered due to a lack of information in the literature, the careful review found that longer term (28 days or greater) use of NSAIDs, compared to short term use, clearly ***resulted in progressively reduced pain and increased function***. It is not known whether this additional benefit is the result of peripheral or central changes in pain processing, or in fact a progressive functional improvement due to increased muscle strength and range of motion as a result of the greater mobility resulting from initial pain relief.

B. Duncan X. Lascelles, BSc, BVSC, PhD, MRCVS, CertVA,
West Vet Conf, 02:12

How much to put in the eye

For ointments and drops, always administer 1/4 inch strip of ointment and always administer one drop. The reasoning behind this latter recommendation is important. The conjunctival fornix of the cat and dog can "hold" about 16 µL and a drop is about 50 µL. Therefore one drop is already threefold too much. Giving a second drop is a six- fold excess. But it is not just wasteful; each drop causes reflex tearing and so two drops still only delivers 16 µL but that 16 µL is washed out by increased reflex tearing. There are a couple of other "golden rules" of topical ophthalmic pharmacology: 1) Always leave 5 minutes between drops of a different type. 2) Always work "up" in viscosity when applying two or more different drops or ointments to the same eye.

David Maggs, BVSc, Dip ACVO
North Am Vet Conf, Jan 2014

Treatment of mastitis

Treatment of mastitis should include systemic antibiotic therapy and stripping or nursing to encourage drainage of the gland. Antibiotics should be selected based on bacterial culture and sensitivity as well as safety for the nursing puppies. Amoxicillin/clavulanic acid is usually an appropriate choice pending culture

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results. Drainage of the gland is encouraged by warm compresses, massage, stripping, and ***application of cabbage leaves***. The active property in cabbage leaves is not known, but it has been used successfully in multiple species as an aid in the treatment of mastitis. Puppies can be left on the dam as long as an abscess or gangrene does not occur. Puppies should be left on the dam for the first 24 hours of life whenever possible as this is when the majority of passive immunity transfer occurs through ingestion of colostrum.

Kara Kolster, DVM, Dip ACT
CVC Wash DC, 04:12

A new learning website

During the 2014 NAVC Conference, the NAVC debuted VetFolio **(http://vetfolio.navc.com)** which seeks to bring the conference experience online. VetFolio is a mobile-friendly website that supports professional development for all members of the veterinary health care team. VetFolio provides access to more than 500 hours of veterinary CE through the Registry of Approved Continuing Education, 2,500 NAVC conference proceedings, "Clinical Views" written by veterinary faculty, moderated discussion forums, how-to articles for practice success, and industry and animal health research news.

JAVMA, Mar 15, 2014

Parturition, when to intervene

In normal labor, the dam may show weak or infrequent contractions for up to 2 and at the most 4 hours before giving birth to the first fetus. If the dam is showing strong and sustained contractions and a puppy or a kitten is not produced within 30 minutes, a possible obstruction may exist and immediate veterinary advice should be sought. The dam should be examined immediately if one of the following signs are noted: 1) green/brownish-red discharge is noted and the first puppy is not produced within 1 hour; 2) weak contractions exhibited for more than 2-3 hours; 3) strong, sustained contractions without the expulsion of the fetus within 30 minutes; 4) more than 3-4 hours elapsing since the last puppy/kitten was born and more fetuses are remaining inside; and 5) the dam has been in Stage II labor for more than 12 hours. Care should be taken in case the dam rejects the neonate and attempts to bite it. In this situation, a light tranquilization with acepromazine (0.01-0.02 mg/kg) might be necessary initially and dam should not be left alone with the offspring until the problem of rejection is overcome. Sometimes, rubbing placental fluids on the neonate may help the mother to recognize it as her own. A few drops of oxytocin may be applied topically to her nostrils to assist in mothering behavior. At times, injections (Cal-Pho-Solution: 1 cc/10 lbs, SQ) have been used to help with hypocalcemia-associated aggression. Care must be used with other subcutaneous preparations to avoid skin irritations. A dog appeasing pheromone (DAP) diffuser may also be helpful in creating a calm, comfortable environment in the whelping room.

Michelle Kutzler, DVM, PhD, Dip ACT
CVC Wash DC, 04:12

Website provides tools for pet nutrition

The Pet Nutrition Alliance has developed a website to provide veterinary professionals with credible resources on pet nutrition. The The American Animal Hospital Association, the AVMA, and other veterinary organizations established the PNA to promote the importance of proper pet nutrition and the value of nutritional assessments for every pet at every veterinary visit. The PNA website offers a collection of tools on pet nutrition for veterinary professionals to use in practice and to educate clients. The website does not have any company branding, although some tools come from companies. The PNA is rolling out the website to veterinary professionals now and will roll out the website to pet owners later this year. The website is www.petnutritionalliance.org.

Am J Vet Res, Apr 2014

Cats and diet

Cats develop strong food preferences early in life. These food preferences influence what cats will eat later in life, and these behaviors are learned, highly conserved, and intense. If a cat does not eat canned foods early in life (at weaning and the first months after weaning) and then does not continue to eat them, it often refuses to consume them later. Cats that develop conditions requiring canned foods for disease management (e.g. lower urinary tract disease, constipation, diabetes, kidney disease) often will not consume them if they have been fed only dry foods previously. This is because their food preferences were ingrained when they were kittens and became habituated when they were adults. Veterinarians need to understand this feline behavior and instruct owners to ***expose cats to multiple types and flavors of food*** early and throughout their lives. That will make it possible to change a cat's diet later should it become necessary. Free-choice dry food feeding is not an appropriate feeding method for optimal nutrition for indoor, neutered cats — even if they are of optimal body condition.

Debra L. Zoran, DVM, PhD, Dip ACVIM
Nestlé Purina Vet Symp, 07:12

Losartan as adjunct therapy for proteinuria

Based on the recognized benefits of angiotensin II-rereceptor blockers (ARB) therapy in people with proteinuric nephropathies, many veterinary nephrologists consider adjunctive administration of these drugs to dogs with persistent proteinuria despite treatment

with ACE inhibitors. First-line therapy with ARBs is not recommended as of yet, as it is still unknown whether long-term prognosis worsens, improves, or does not change in affected animals. The generic formulation of losartan is affordable by most owners and has been used by many veterinary nephrologists as an adjunctive treatment in dogs with refractory proteinuria. An initial losartan dosage (0.125-0.25 mg/kg, BID can be administered as an adjunct to an ACE inhibitor (continued at the standard dosage) for 4-7 days, followed by measurement of the serum creatinine concentration to confirm that azotemia has not markedly worsened. The losartan dosage can then be titrated up in a stepwise fashion, based on continued reduction of the UPC ratio, to a maximum of 0.5-2 mg/kg, BID, rechecking the serum creatinine concentration and UPC ratio after each dosage adjustment. Because of the limited literature regarding ARB therapy in dogs, the author encourages you to discuss with a specialist whether administering an ARB in a particular patient may be indicated.

Barrak Pressler, DVM, PhD, Dip ACVIM
Vet Med, 108:8

Standard heartworm treatment

There are clear advantages and disadvantages to each method of adulticidal therapy. Perhaps the solution is the "back to the future" approach of using 2 injections, 24 hours apart, the protocol used by the majority of practitioners when melarsomine was brought to market. The advantages include lower cost, rapid clearing of the parasites with an approximate 90% of worms killed (note: this is not the percentage of dogs cleared, which is as low as 70%). This is not the author's preferred approach when there are no financial considerations. However, when the choice is between doing nothing at all and "soft-kill" adulticidal therapy, the standard 2-dose protocol is likely superior in young, otherwise healthy dogs with HWI. Furthermore, the diagnostic workup considered to be "good medicine" for the well-to-do client can be avoided for the less affluent owner of a young, otherwise healthy dog. This was demonstrated in the 4 years following Hurricane Fran (1996). Over 350 HW-infected dogs owned by "low-income" North Carolina families were treated using the standard 2-dose method without pretreatment imaging or laboratory workup. Of these, 2 older dogs died, giving a mortality rate of only 0.5%, certainly an acceptable number under these circumstances. It is imperative, when "all" the worms are killed with two injections of melarsomine, that exercise be **strictly** curtailed for at least 30 days.

Clarke Atkins, DVM, Dip ACVIM
81st AAHA Conf, Mar 2014

Boxers sensitive to acepromazine

Boxers with English genetic lines *may* be more sensitive to the hypotensive effects of acepromazine. Boxers that come from American genetics do not appear to have this sensitivity. When presented with a Boxer, if the author is unsure of the genetic line, acepromazine is used cautiously or at low doses, and blood pressure is monitored throughout the procedure.

Lesley J. Smith DVM, Dip ACVA
AVMA Conf , 08:12

Drug doses for CPR

Epinephrine should be given at a dose of 0.01 mg/kg, IV, every other cycle (about every 4 minutes). If there is no response after 10 minutes, a high dose (0.1 mg/kg) can be given. If drugs are going to be given via the endotracheal tube, administer with a red rubber catheter to ensure delivery into the lungs. Vasopressin may also be used interchangeably with epinephrine and may be a better choice in patients known to be acidotic. The dose is 0.8 U/kg, IV. Despite its widespread use in CPR, there is little evidence to show that atropine has a beneficial effect. It is relatively safe, however, and may be useful in patients with vagally mediated cardiac arrest. The dose is 0.04 mg/kg, IV. Consider electrical defibrillation for patients with ventricular fibrillation (not for asystole, despite what they do on Grey's Anatomy). Continue chest compressions while the machine is charging, and be sure to roll the patient onto its back (dorsal recumbency) so you can place the paddles on either side of the chest. Apply the electrical shock and continue chest compressions for another cycle. If there is no response, repeat the defibrillation with a 50% increase in the dose.

Daniel Fletcher, PhD, DVM, DipACVECC
Vet Med, Mar 2014

Feline dermatology pearls

Lentigo is an increase in pigment associated with aging; it is most prominent in cats with orange color genes. It can seem to occur almost over-night. It may occur in the uvea: always trans-illuminate to determine whether pigmented area is flat. If very dark pigment protrudes anywhere on the cat, be concerned about melanoma: remember that the eye is the most common site of melanoma in cats. Buy calipers and measure length, width and height of every mass. Record data for future comparison. Do FNA of any skin mass in the cat; dermatologists say up to 85% of skin tumors on cats are malignant. (Hint: If using a quick stain such as Diff Quik, fix all slides for 15 minutes in fixative then do the red and blue stains; this assures you good color in mast cell tumor granules). Remember *Demodex gatoi* the short fat mite that causes intense pruritus and is minimally responsive to steroids; often easier to find in fecals

than in skin scrapings. If a cat has a sudden onset of skin lesions or claw and feet disease, especially in a cat without a history of such problems, always think of paraneoplastic or metastatic disease! Hepato-pancreatico-cutaneous syndrome is seen in cats. It may appear as ecchymosis, alopecia, "lick lesions" or simply easy to epilate hair. Claw or foot lesions can be the metastatic site for bronchogenic adenocarcinoma or other cancers.

Hazel C. Carney, DVM, MS, Dip ABVP
SW Vet Conf, 09:12

Bones for dental health?

Some advocates of feeding bones to dogs claim that bones are beneficial for their oral and dental health. A study in African wild dogs found that they had dental diseases similar to those of domestic dogs; many of the wild dogs had periodontitis without signs of dental tartar, so although their teeth may have appeared cleaner, their gums were not necessarily healthier. Studies of large wild cats also have shown feline odontoclastic resorptive lesions similar to those found in domestic cats. A bone large enough that it cannot be chewed into pieces is unlikely to cause GI obstruction; however, bone chewing is a frequent cause of fractured teeth. Smaller or splintered bones are at risk for obstructing the esophagus, stomach, or intestines. There is a conception that feeding raw bones may be safer than feeding cooked bones, although there is no evidence for or against this concept. Raw bones can carry the same inherent risks for pathogen contamination as does consumption of raw meat.

Marjorie L. Chandler, DVM, MS, MANZCVSc, Dip ACVN
NAVC Clin Brf, 12:2

Increasing feline office visits

Interestingly, in the initial phase of the Bayer veterinary care usage study as well as in the present phase, pet owners identified low-cost preventive care plans paid in monthly installments and receiving a written examination report with recommended care instructions as two things that would most likely cause them to increase their visits to veterinarians. Yet, in the current survey, only 5% of veterinarians indicated that they offer preventive care plans paid in monthly installments and only 17% said they consistently provide written reports for every examination.

John O. Volk, BS et al.
JAVMA, Apr 1. 2014

Using the NTproBNP in the cat

NTproBNP may not identify cats with mild structural heart disease and cannot be used to definitively diagnose a specific form of heart disease. Therefore, if you have an apparently healthy cat that would be considered to have an increased risk of having heart disease (e.g., a cat with a heart murmur, or gallop heart sounds or an arrhythmia), then an echocardiogram should be recommended. If an echocardiogram is declined an NTproBNP may be useful to help further assess the likelihood of the cat having moderate to severe structural heart disease. The threshold for the NTproBNP test to be considered positive is >100 pmol/L or SNAP +. This means that cats with SNAP+ just like cats with an NTproBNP >100 pmol/L have an increased risk of having moderate to severe structural heart disease (e.g. an abnormal echocardiogram). A positive test (>100 or SNAP+) should be used to encourage owners to undergo definitive testing with an echocardiogram or at least allow you to acquire baseline thoracic radiographs. NTproBNP testing does not replace the gold-standard screening recommendations (annual echocardiogram in at risk cats) but can be used as a scaled down alternative with informed owner consent. NTproBNP does not definitively diagnose the heart disease and thus cannot be used as the sole indication to initiate therapy because not all cats with an NTproBNP >100 will have an abnormal echocardiogram. Cats with an NTproBNP <100 or SNAP- have a very low likelihood of having moderate to severe heart disease allowing clinically significant heart disease to be ruled-out at that time. However, because heart disease can and will progress in some cats, an NTproBNP <100 does not imply the cat will always be normal. At risk cats should be reevaluated annually or in some cases sooner.

Sonya Gordon, DVM, DVSc, Dip ACVIM
Penn Vet Conf 2014

What not to feed in dietary trial

The owner must be advised that substitutions, additions, snacks or treats (except fruits and veggies) are not permitted during the test period. All flavored vitamin supplements, preventative medication, and fish oil supplements must be stopped or a non-flavored version substituted during the food trial. All raw hide chew toys, pig ears, cat food, cat feces, etc must be placed out of reach. Outdoor pets should be confined during the course of the trial to prevent dietary indiscretions. Even the litter box must be made unattainable to the indiscriminate canine palate. It is also very important to *switch to non-chewable heartworm preventive!* A recent study showed that once-a-month heartworm pill (containing soy and beef) is sufficient to keep a soy-allergic dog symptomatic.

Jenise C. Daigle, DVM, Dip ACVD
Mich Vet Conf, Jan 2014

Reminder: Last year's index is available at our website. Don't miss next month's article on "Bad press for carbohydrates."