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"Pearls" of Veterinary Medicine

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Misdiagnosis of hip dysplasia

The author sees this scenario—a lame dog, diagnosed with hip dysplasia (which he very well may have) but the real problem is a CCL—at least once a week. Most animals, especially large breeds, do not completely tear a CCL acutely. Rather, they have multiple small partial tears of the CCL that often start off as a subtle lameness—that can look like arthritis. The lameness gets better with rest, and possibly an antiinflammatory drug, but worsens with activity—the cycle just keeps repeating itself. It's not uncommon when the pet is presented to the veterinarian that it appears normal. As the CCL tears more and more, the frequency of the repeating lameness increases, the dog is more significantly lame than the time before, and often takes longer to improve. The symptoms can mimic a dog with hip dysplasia. Generally, there is a soft swelling on either side of the straight patellar ligament, often a medial buttress of fibrous tissue in the region of the medial stifle collateral ligament, and almost always pain on hyperextension of the stifle joint can be elicited, even if there is no drawer motion. So even though you do not feel drawer motion, ***DO NOT rule out CCL pathology*** and be very very cautious on jumping in and performing an femoral head and neck osteotomy on a non-weight bearing lame patient with only mild to moderate degenerative changes of a hip, especially if he is middle age. Always ask yourself, "The pet has had hip OA all of his life, so why now is he non-weight bearing?

Robert M. Radasch, DVM,MS, DACVS
N Amer Vet Conf, 01:15

Relation of behavior and GI disease

Recent research indicates that many repetitive behaviors in dogs, particularly fly snapping and excessive licking, are associated with a variety of gastrointestinal diseases. There is a growing body of research in humans and a variety of animals showing clear links between behavior changes and alterations in the gut microbiome. The gut microbiome is both an endocrine and metabolic organ with bidirectional communication with the brain via the vagus nerve, humoral immune system, and the HPA axis. Alterations in the microflora of the biome are associated with a variety of behavior symptoms including depression and anxiety. There is a growing, clear link between inflammatory states and increased anxiety and depression. This author commonly sees comorbid behavior problems and GI disease. There are frequently clear links between the control of the patient's GI disease and the waxing and waning of the behavior symptoms. ***Inability to control the GI disease often means inability to control the behavior issue***. Goldendoodles with behavior problems have a high incidence of chronic GI disease and this author routinely queries owners of this breed about GI symptoms. This behavior-GI link is of such importance that the author routinely monitors the patient's GI health and addresses issues quickly. (GI disease can also affect absorption of medications which can influence therapeutic outcome.) In short, clinicians should take all chronic or episodic GI symptoms seriously.

Lori I. Haug, DVM, MS, DACVB
21st ABVP Conf, 10:16

Heat treatment of heartworm samples

Researchers have found that applying heat to antigen-negative serum samples will sometimes cause antigens to "show up," ***reversing the negative result to positive***. They suspect that antigens bind with heartworm antibodies that are also circulating in the blood, forming immune complexes that aren't detected by standard anti-

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gen tests, and heat breaks down these bonds. If you have a suspicion of heartworm in a patient and get a negative antigen test result, then heat treatment is a good idea. If a dog presents in a heartworm-endemic area or has been shipped from a heartworm-endemic area, or if a dog is suggestive of heartworm disease based on testing and radiographs, and yet it's antigen-negative, that patient might be a candidate for heat treatment. Because cats have low heartworm burdens, they're much more likely to be antigen-negative. But there's evidence that the reversal phenomenon works for feline serum also—heat treatment of feline samples in which you suspect infection may convert the results to heartworm-positive status.

Byron Blagburn, PhD
DVM News Mag, Apr 2017

CKD and urolithiasis, an association

Urolithiasis is a recognized risk factor for chronic kidney disease in human patients, and a review of medical records for 126 cats (59 with and 67 without urolithiasis) suggested that there is an ***association between urolithiasis and CKD*** in cats, although the nature of that association is not yet clear. In the study, the prevalence of CKD was significantly higher in cats with urolithiasis than in the control group. Among cats with urolithiasis, there was a negative association between CKD and presence of cystoliths. However, there was no association between urolithiasis and the stage of CKD or between the presence of CKD and location of nephroliths in the kidney. This association between urolithiasis and CKD suggests that feline patients with urolithiasis should be evaluated for CKD. It remains unknown whether urolithiasis is a predictive factor for, or a consequence of, CKD.

Andrèanne Clèroux, DVM et al.
JAVMA, Apr 1, 2017

After heartworm lapses

Macrocyclic lactones provide a safety net known as "***reach- back***" or "retroactive efficacy' when given continuously for at least 12 months. The length of the reach-back varies by product, with all products proven to be about 95% efficacious against nonresistant strains in the laboratory when given for at least 12 consecutive months after lapse. This protective benefit can be useful but should not be relied upon as part of routine heartworm prevention. Another important compound is doxycycline, which can be administered as monotherapy at 10 mg/kg, BID, for 30 days to kill L3 and L4 larvae—it even kills immature adults that have escaped or will escape macrocyclic lactone prevention.

Clarke Atkins, DVM, DACVIM
DVM News Mag Supp, Mar 2017

Cancer and carbohydrates

Evidence does exist that cancer cells utilize more glucose and metabolize it through glycolysis more often than normal tissues, but these laboratory findings have not been supported by clinical evidence that low-carbohydrate diets slow cancer growth in people. There is also concern that a "one-size-fits-all" approach to diet during cancer treatment is inappropriate, as some cancers are more likely to cause cachexia or other nutritional deficiencies. Despite the fact that a commercially available low-carbohydrate diet is available and marketed for canine cancer patients, research in the field of nutrition and cancer is lacking in veterinary medicine. So far, ***this diet has not been shown to improve outcome in pets with cancer***. Very low-carbohydrate diets also can cause GI upset due to the high fat content and are not safe for all patients.

Katherine Skorupski, DVM, DACVIM
Vet Pract News, Apr 2017

Respiratory rate as an indicator in heart disease

Pulmonary edema results in an increase in respiratory rate at rest or during sleep. It is a much more ***sensitive indicator of congestive heart failure*** than cough and various echocardiographic parameters. It is therefore very useful to monitor respiratory rate during the acute management of congestive heart failure in the hospital, but also for monitoring at home. A respiratory rate above 40 breaths/min suggests the presence of pulmonary edema in dogs with mitral valve disease. A rate above 34 breaths/min is a strong indicator of congestive heart failure in large breed dogs with dilated cardiomyopathy.

Romain Pariaut, DVM, DACVIM, DECVIM
N Amer Vet Conf, 01:15

Alleviating bone cancer 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 the author adds to her armamentarium the 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. There are situations where amputation is not an option either because of the emotional feelings of the client or physical constraints of the patients. There are many veterinarians treating osteosarcoma that believe that amputation is not a viable option due to the disability and movement concerns posed post operatively. Pamidronate has afforded this author's practice with a viable alternative to both amputation and radiation and has resulted in what is considered significant improvement in not only

quality of life, but significant additional length of life for osteosarcoma patients.

Kathy Mitchener, DVM
AAHA Conf, 2017

Treatment of diskospondylitis

Diskospondylitis is an important differential diagnosis in animals presenting with spinal pain. Spinal radiographs should always be taken in animals with spinal pain to rule out diskospondylitis. Ideally antimicrobial therapy should be based on the culture and sensitivity results, but if these tests are not available, or are negative, then empirical treatment for the most commonly isolated organism, beta-lactamase producing *Staphylococcus* spp., should be initiated. Antibiotic therapy with first generation cephalosporin (cephalexin - 22 mg/kg, TID) tends to be the antibiotic of choice. Treatment should be at least 6-8 weeks, but may be up to 6 months. Dogs with intense hyperesthesia may require hospitalization, intravenous antibiotics, and analgesia. Dogs should go home on oral antibiotics and NSAID's with strict confinement for the initial 4-6 weeks. If there is a good response in the initial week of treatment then 70%-80% recovery is expected. During treatment, follow-up radiographs should be taken every 4-8 weeks until evidence of bony lysis has resolved and bony fusion is evident.

Roger Pettigrew, DVM, DACVIM
So Cal VMA Pulse, Apr 2017

Clinical studies website

As a reminder, the AVMA has a clinical studies website, called the AVMA Animal Health Studies Database. This will allow pet owners who may be interested in trying to find out if there are any studies that may either help their animal or may at least help direct the advancement of knowledge for the condition. Visitors to the website can view all available studies with potential medical benefits to enrolled animals and financial incentives for study participants. The website is: www.avma.org/FindVetStudies.

JAVMA, 249:2

Using mupirocin for otitis

A problem infection seen by this author is otitis associated with methicillin resistant S. *pseudintermedius* or methicillin resistant S. *schleiferi*. Diagnosing this infection often precludes the use of a systemic antibiotic, but the author has found that ***topical mupirocin to be very effective***. Mupirocin is safe in the middle ear, and is often placed into the middle ear of human patients. Mix mupirocin in HB101 and have the owners fill the ear canals twice daily. These patients are followed with cytology as well. Once the infection with either Pseudomonas or Staph is brought under control, the author institutes maintenance ear cleaning and work on finding and controlling the underlying cause. For MRS in the ear: take 1/2 tube of mupirocin, add to a 2 oz. squeeze bottle and fill to 2 oz. with Hydro-Plus brand of HB101 (available from Patterson Vet Supply; pattersonvet.com). Mix thoroughly. Fill the ear canals twice daily. For yeast in the ear: take one bottle of Conofite, and remove 3-5 ml. Add back 3-5 ml Synotic. Put several drops in each ear twice daily.

Brian A. Scott, DVM, DACVD
3rd Gulf Atl Vet Conf, 11:15

Dealing with Pseudomonas otitis

Once the cleaning is done, these dogs usually feel much better. There are a number of topical treatments that can be sent home for continued ear treatment. This author usually continues the oral steroids for an additional 2-4 weeks, tapering the dose. A ***very useful topical ear treatment*** for many dogs with Pseudomonas is high concentration enrofloxacin in Tris EDTA ear wash. Even if the Pseudomonas is reported as resistant, it is important to remember that these sensitivities and resistances are based on achievable blood levels by oral or systemic administration. Putting a high concentration of enrofloxacin directly onto the bacteria can be very effective, especially after the biofilm has been disrupted. HOWEVER, it is important to note that this topical will not always work well. The final concentration is 10 mg/ml of enrofloxacin, so large animal injectable Baytril (100 mg/ml) is recommended. It is easy to take a 4 oz bottle of T8 or Tris EDTA and subtract 12 ml; then add back 12 ml of Baytril. This is a 1:10 dilution. Generally this author adds injectable dexamethasone so that there are 6 mg of dexamethasone per ounce. The instructions to the client are to fill the ear canal twice daily. Once finished with treatment, all dogs go on maintenance ear cleaning forever.

Valerie A. Fadok, DVM, PhD, DACVD
82nd AAHA Conf, 03:15

Diagnosis of Malassezia dermatitis

Diagnosis is by demonstration of the organism by cytology, culture, or histopathology. Cytology is the best method for diagnosis of Malassezia dermatitis. The organism can be found by rubbing a cotton swab in the greasy exudate on the dog. The exudate is then transferred to a glass slide which is heat fixed and stained with Diff-Quik or new methylene blue. If the animal has the "dry" form of the Malassezia dermatitis, it is best to use a "sticky" slide – Delasco Pressure Sensitive adhesive (Delasco human dermatologic company, 800-831-6273). Order the two or four ounce bottle to make slides or clear cellophane double stick tape pressed onto lesional skin, mounted on a glass slide without a coverslip and stained can be used. The organism can be identified under oil immersions. Biopsy of the affected skin for histopathology can be useful. However, relying on biopsy results alone will lead to a high incidence of false negative results, since one or two organisms would undoubtedly be missed. Culture of the organism is difficult, and a positive culture will not be as informative as cytology.

Sandra R. Merchant, DVM, DACVD
20th NC Vet Conf, 11:15

Idiopathic nasal hyperkeratosis

This disease is most commonly noted in middle aged

to older dogs with the Cocker spaniel being over represented. It has also been suggested that it is a senile change. It may be concurrently associated with pad hyperkeratosis. The nose becomes dry, rough and hyperkeratotic, especially on the dorsum of the nose. Fissures, erosions and ulcers are only occasionally noted. There is no depigmentation or inflammation. This is an important observation which helps to clinically differentiate the lupus or pemphigus group of diseases (which may also be hyperkeratotic). The diagnosis is generally made on a clinical basis. Therapeutic considerations include the daily topical administration of Kerasolv (DVM Pharmaceuticals; salicylic acid, sodium lactate and urea in propylene glycol), Bag Balm or tretinoin gel (Retin-A; Ortho). Petrolatum may also be used. More rapid removal of the hyperkeratotic debris may be facilitated by ***pre-hydrating the planum*** (water compresses for 5-10 minutes) prior to application. Oral vitamin A may also be of benefit. Dosages are usually in the range of 8,000-20,000 Units, BID.

Sonja Zabel, DVM, MS, DACVD
AVMA Conf, 07:15

Preventive treatment for tick-borne diseases

Periodic antimicrobial treatment of dogs in areas highly endemic for organisms causing ehrlichiosis or anaplasmosis may be considered, especially for hunting dogs that are at greater risk for ongoing tick exposure. You can also consider low-dose daily therapy with doxycycline (3 mg/kg, orally, once a day) during tick season.

Mary Bowles, DVM, DACVIM
DVM News Mag, Supp, Apr 2017

Constipation in the cat

The first step in management is correction of dehydration with intravenous fluid therapy followed by removal of obstructing feces. One or two doses of a 5 mL microenema containing sodium lauryl sulfoacetate (MicroLax; microlax.com) is easily administered and will usually produce results within 20-30 minutes in mildly affected cats. Obstipated cats will require warm water or isotonic saline enemas (5-10 mL/kg). Safe additions to the water include mineral oil (5-10 mL/cat), or docusate (5-10 mL/cat), but do not administer the two together. Soaps or detergents may be irritating to an already compromised colonic mucosa. Lactulose solution can also be administered as an enema (5-10 mL/cat). Sodium phosphate containing enemas must not be used as they can induce life threatening hypernatremia, hyperphosphatemia and hypocalcemia in cats. Enemas are administered slowly with a lubricated 10-12 French feeding tube.

Susan Little, DVM, DABVP
AVMA Conf, 07:15

Detecting early hyperthyroidism in cats

Despite the limitations of the serum cTSH test, with its inability to differentiate low-normal results from truly suppressed or undetectable values, this author believes that measurement of serum TSH concentration has ***diagnostic value in cats with early or mild hyperthyroidism***, especially when measured in conjunction with total and free T4 concentrations. The diagnostic test sensitivity is a bit higher than either the total or free T4 concentration, but the specificity is low. However, the finding of a total T4 within the upper third of the reference interval combined with both a high free T4 and a suppressed TSH concentration is consistent with a diagnosis of early hyperthyroidism. On the other hand, the finding of high-normal T4 with a normal free T4 or measurable TSH concentration makes hyperthyroidism much less likely. In this latter case, one should reevaluate the diagnosis, withhold treatment, and continue to monitor unless other evidence for hyperthyroidism is present (e.g., compatible clinical signs, palpable thyroid nodule, positive thyroid scan results).

Mark E. Peterson, DVM,DACVIM
ACIM Forum, 06:15

Analgesia in rabbits

Pain management of pododermatitis and osteoarthritis is an essential part of therapy. In case of mild or severe pododermatitis, surgical therapy should be started as soon as possible to avoid spreading the disease into deeper tissues and consist of relieving pressure on the affected area and treating the inflammation. Analgesia is provided by the use of combination of NSAIDS and/or opioids. NSAIDs with good or very good positive effect are meloxicam (0.2-0.8 mg/kg, PO, q12-24h) and carprofen (1-5 mg/kg, PO, q12-24h). Care must be taken when dealing with kidney or GI disease. Tramadol (10 mg/kg, PO, q12h) or buprenorphine (0.03-0.05 mg/kg, SQ q8-12h) are the author's opioids of choice. Each clinical case must be assessed individually and the drug dosage adjusted to the patient needs. Especially in case of meloxicam dosage, this author has managed chronic pain in some rabbits and herbivorous rodents with meloxicam as low as 0.1 mg/kg.

Vladimir Jekl, DVM, PhD, DECZM
21st ABVP Conf, 10:16

Timing the dose of omeprazole

Omeprazole, like other proton pump inhibitors (PPIs), acts to reduce meal-stimulated gastric acid secretion. Thus, the current recommendation for PPI administration is to administer the drug 30 minutes before a meal so the medication is at peak effect when the patient is fed. However, in a recent study, omeprazole administered to cats with a small food bolus was effective. This may be an easier option for medicating cats, but PPI administration before a meal is recommended for dogs and cats that are easy to pill.

Emily Gould, DVM, MS and M. Katherine Tolbert, DVM, PhD
NAVC Clin Brf, 14:11