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"Pearls" of Veterinary Medicine

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AT A GLANCE

Diagnosing hyperadrenocorticism (HAC)

"Is there any value to an ACTH stimulation test?" There is. The reason that many clinicians at vet schools run ACTH stimulation tests is completely logistical. Clients may be driving 2 or more hours and they want to go back home the same day. So, this author will do an ACTH stimulation after explaining that we have a 70%-80% chance of the test being positive if the dog has HAC. The author makes sure they understand that an LDDST is better, but it takes 8 hours. If an ACTH stimulation test is done and confirms HAC, there is no follow-up with LDDST. The author believes the ACTH stimulation test is a pretty specific test, it just isn't as sensitive as the LDDST and doesn't differentiate. If it confirms the diagnosis of HAC, the author usually follows up with an abdominal ultrasound or endogenous ACTH concentration for differentiation.

Patty Lathan, VMD, MS, DACVIM
Clinician's Forum, 05:19

Tylenol

Acetaminophen (Tylenol, etc.) is an analgesic and antipyretic for dogs, but not anti-inflammatory. Not really an NSAID! Dog dosage is: 4.5-6.8 mg/lb (10-15 mg/kg), q8h, PO. There is a hepatotoxicity potential. Tylenol lacks GI toxicity. Can be most useful for dogs in opioid combinations, particularly for cancer pain, but also popular postoperative use as Tylenol #3 or #4. Can combine with traditional NSAIDs and reduce doses of each. ACETAMINOPHEN IS VERY TOXIC FOR CATS!

Ralph Harvey, DVM, MS, DACVAA
Gulf-Atlantic Vet Conf, 10:17

An alternative to endotracheal tube, cat

As an alternative to using an endotracheal tube, a supraglottic airway device (the Cat v-gel; Docsinnovent Ltd, London, United Kingdom; Google for numerous videos on using) has been designed to conform to the shape of the feline larynx and pharynx and has been evaluated in clinical settings. The time to obtain a clinically acceptable capnograph (end tidal carbon dioxide) reading which verifies an airway has been established, was shorter when a SGAD (median time 44 seconds) was used compared to an ETT tube (median time 109 seconds) suggesting that the airway can be more rapidly secured using the former technique. Compared to placement of an ETT, less propofol is required to secure an airway with a SGAD. There was also less discomfort and stridor and greater food intake after use of a SGAD compared to an ETT.

Sheilah A. Robertson, BVMS, PhD, DACVAA, DECVAA
VMX, 02:18

Diffuse Idiopathic Skeletal Hyperostosis (DISH)

DISH may appear similar to spondylosis, yet it is a separate condition. It is a severe ossification of the ventral longitudinal ligament that limits vertebral motion and can affect gait, posture, and performance. It has a genetic component with a prevalence in Boxers of 40.6%. A lateral radiograph of the spine is diagnostic. Acupuncture, laser, massage, manual therapy, and pulse electromagnetic field therapy may aid secondary discomfort but will not bring motion back to the spine once it has fused. Biost from Standard Process (standardprocess.com) is a formula to aid in removing excessive calcification. Though this author has not tried it in DISH patients, it may be a viable treatment option as it has been ***successful in similar calcification patterns***.

Laurie McCauley, DVM,DACVSMR, CCRT, CVA, CVC
Emerald Coast Vet Conf, 06:18

Diabetes remission in the cat

Which cat will go into remission??? As in humans, cats that have experienced more prolonged hyperglycemia will have experienced a greater deterioration of beta-

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cell function resulting in a lower chance of remission. There is no factor that consistently predicts diabetic remission in the cat but the shorter the duration of DM, the faster glycemic control is achieved and those patients with less severe hyperglycemia when starting appear to be factors that are favorable. Early client recognition, early diagnosis, intensive treatment with twice daily insulin and ultra-low carbohydrate diet are key. One of the challenges we face as veterinarians is the opportunity to diagnose this disease in the early stages. Cats are "masters of disguise." They also do not receive regular veterinary care. Often by the time we see the patient and diagnose the disease, the cat already has lost weight and muscle mass, has a poor hair coat, glucose toxicity of the beta cells, diabetic neuropathy and possibly DKA. Using every opportunity, a veterinary team has to teach cat owners the importance of early disease diagnosis through regular veterinary care. Teaching the subtle signs of sickness is critical. The author recommends using ***Cat Healthy*** as a resource to educate every client that comes through our doors. In addition, once diagnosed with diabetes, the Cat Healthy website, www.cathealthy.ca has a series of educational videos about diagnosis, treatment and outcome for the newly diagnosed diabetic cat family. The Cat Healthy Protocols contain a compliance section listing other useful resources for the family as they start the journey of insulin treatment and blood glucose monitoring for their cat. The earlier we diagnose and treat the disease, the better chance we have of remission.

Kelly St. Denis, DVM, DABVP
CVC Kansas City, 08:17

Juvenile hip dysplasia

Puppies and young adults with OA are treated medically as needed to control pain and lameness. Administration of drugs (NSAIDs, steroids, PSGAGs, Hyaluronate) or supplements (fatty acids, glucosamine, chondroitin sulfate, manganese) are useful to control discomfort. A fatty acid supplement called Antinol (antinolforpets.com) has been found to provide improvement in clinical signs within 2 weeks and may be indicated long term to reduce synovitis to control pain and reduce the progression of OA. The administration of drugs should be at a minimum level (dose and frequency) to achieve comfort. Total hip replacement or femoral head ostectomy are recommended if medical therapy fails to adequately control clinical signs.

Caleb Hudson, DVM, MS, DACVS
Emerald Coast Vet Conf, 06:17

Home exercises for hip dysplasia

Slow walks on a leash are perhaps the most important exercise in the hip dysplasia patient. Leash walks are the simplest, cheapest low-impact exercise that can be prescribed. Often owners discontinue activity because their dog is painful, but this contributes to worsening of pain and stiffness in the hip. The motto "use it or lose it" is very applicable to hip dysplasia, and should be practiced in moderation. Beginning with very short purposeful walks of 5-10 minutes duration twice daily, then increasing weekly can have surprisingly positive results. A "purposeful" walk is one that focuses on consistently walking, rather than allowing the dog to sniff or mark for the majority of the walk time. Also, a harness, with or without resistance bands, may assist in shifting weight to the hind limbs and providing more control for the handler. Walks up and down inclines and hills will help to strengthen muscles with relatively low-impact activity.

Marti Drum, DVM, PhD, DACVSMR, CCRP, CERP
VMX, 02:18

Feline stomatitis

If full mouth extractions do not offer significant relief, and the patient does not have any contraindications, steroids can be an option at decreasing the inflammation in the short term or in times of desperate need. Rather than steroids for long term management, this author tends to reach for cyclosporine having had good success at 2.5-5 mg/kg, PO, BID, but it can be a bit "putsy" in terms of finding the right dose and monitoring. Typically, after starting cyclosporine, recheck a trough level (12 hours after last dose) at 4 weeks post initiating therapy. A complete blood count and serum biochemistry should also be performed to watch for bone marrow suppressive effects and/or liver concerns, etc. Although a reference range is listed with most labs, we do not really know what the best therapeutic levels truly are (ideally somewhere between 400-1000), however clinical response (and lack of side effects) is what we are really evaluating and adjusting towards. The author has had many at "sub-therapeutic levels" that are thriving. In many cases, after the initial few months when the patient is under control, this drug can also be slowly weaned to the lowest effective dose.

Donnell Hansen, DVV, DAVDC
SD VMA Conf, 08:18

Using Temaril-P

There are a small number of dogs who are poorly responsive to oclacitinib, cyclosporine, or Cytopoint. In those cases, glucocorticoid remain our only viable choice. This author likes to start with the veterinary drug Temaril-P, a tablet containing the antihistamine trimeprazine and 2 mg prednisolone. The author finds this drug to be very effective in most patients, allowing us to keep the steroid use down and achieve good control of itch. Candace Sousa has published an easy calculation for long term steroid use that 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. If you are using Temaril-P, you divide that number by 2, and you have the number of Temaril-P tablets per year. This dose, based on her experiences, has been least likely to cause problems. If this dose is exceeded, the likelihood of problems may be increased.

Valerie A. Fadok, DVM, PhD, DACVD
Music City Vet Con, 02:19

Heartworm treatment protocol

The American heartworm society (AHS) treatment protocol—which this author recommends—includes the following: **A pretreatment phase** consisting of two months of a macrocyclic lactone preventive, four weeks of doxycycline therapy and applying an EPA-approved repellant. The objectives are to reduce new heartworm infections, eliminate existing susceptible larvae, render the dog unable to serve as a source of infection and to reduce *Wolbachia* numbers in all heartworm stages. Eliminating *Wolbachia* bacteria weakens the adult female worms and reduces their biomass. This an important factor when worms die later as a result of adulticide therapy. **Administration of prednisone** to reduce the inflammatory impact of thromboemboli and mechanical beating of foot-long worms against the pulmonary artery. **Three injections of melarsomine** on days 60, 90 and 91 to eliminate adult heartworms.

Christopher Rehm, DVM
Clinician's Brief, 17:3

Using metronidazole for Giardia

Metronidazole is still a useful drug for treating Giardia, and it has the added advantage of having antibacterial as well as antiinflammatory properties. In situations in which it is unclear whether diarrhea is due to giardiasis, bacterial overgrowth, or mild inflammatory bowel disease, metronidazole is a good choice, especially when a client requests empirical therapy rather than definitive diagnostic testing. Metronidazole is only 67%-74% effective in eliminating Giardia from dogs, however, and if a positive diagnosis is made fenbendazole or febantel would also be a reasonable choice. Potential side effects of metronidazole include anorexia, vomiting, and neurologic problems (ataxia, vestibular problems, seizures). In this author's experience these side effects are not common. They are more likely to occur when the anti-Giardia dose is used (25 mg/kg, PO, q12h, for 5-7 days). *The total dose of metronidazole should never exceed 65 mg/kg per day (30 mg/lb per day).* A lower dose (10 to 20 mg/kg every 12 hours) is used in treatment of intestinal bacterial overgrowth and inflammatory bowel disease. Side effects are infrequent at this dose. In the past, if a 5 to 7 day course of metronidazole failed to eliminate Giardia, a longer follow-up course (10-14 days) was often used. With the availability of fenbendazole and Drontal Plus it is recommended that one of these drugs be used instead in this situation. Metronidazole neuro toxicity can be resolved more quickly by administering diazepam for several days.

Todd R. Tams, DVM, DACVIM
MO VMA Conf, 01:19

Testing principles of FeLV

Even with the high quality of the test systems available, the incidence of disease in the population of cats you are testing must be taken into account when you are interpreting FeLV test results. If the incidence of FeLV in the test population is only 1% as might be expected in a typical healthy suburban cat population, and you are using a test with a sensitivity and specificity of 98%, the reliability of a positive test is only 33%. That is, two of the three positive results you get from testing 100 healthy cats are false positive. Therefore, an apparently healthy cat or kitten should never be condemned on the basis of a single positive ELISA test result. Alternatively, using the same test on a sick cat population with an incidence of FeLV of 30%, the reliability of a positive test result is 99.7%.

Alice M. Wolf, DVM, DACVIM, DABVP
Music City Vet Conf, 02:17

Sedation of.....

A young-to-middle-aged, healthy cat with no pre-existing disease or deterioration in organ function undergoing a nonpainful or only mildly painful procedure (e.g., Ultrasonography, Bandage Change). Butorphanol (0.1-0.3 mg/kg, IV, or 0.3-0.5 mg/kg, IM) + dexmedetomidine (0.002-0.004 mg/kg, IV or 0.004-0.010 mg/kg, IM) ± ketamine or alfaxalone (1-3 mg/kg, IM). This combination may sometimes be referred to as ***kitty magic***. Partial or complete μ-opioid agonists may be substituted for butorphanol for noxious procedures. In cats, sedation does not occur as reliably with opioids as compared with dogs, and cats may become euphoric or dysphoric. Clinical experience suggests that although butorphanol is useful for a short duration and treatment of mild pain, it is the most sedating of the opioids in cats. Bradycardia should be expected in patients that receive dexmedetomidine and opioid combinations. Alfaxalone can cause seizure-like twitching and noise sensitivity; thus, cats should be kept in a dimly lit, quiet area during recovery from this drug. Oxygen should be administered. For reversal naloxone (up to 0.01 mg/kg, IM, SC, or IV to effect; atipamezole (0.05-0.10 mg/kg IM). Neither ketamine nor alfaxalone is reversible.

Khursheed Mama, DVM, DACVAA
Clinician's Brief, 03:19

Things to know before entering practice

Some nuggets of know-how that this author wished she knew before entering practice. **Never treat a parvo case with out getting the money up front**. Never. Never. Never. **Learn to work up a case with only $100.** Choose the tests that will give you the most answers, and remember that sometimes response to treatment can be regarded as a diagnostic aid. Keep a quarter in your pocket, because things really might come down to a coin-toss. Y**ou will never love orthopedics.** Save your money on that CE course because you will be much happier sending those cases to someone who is a thousand times better and faster than you are. **Make up a fake job when you sit next to strangers.** Don't let that woman at the hotel pool strike up a conversation about when she should

euthanize her Chihuahua—it will put a real damper on your Caribbean getaway.

Melissa Detweiler, DVM
Vetted July, 2019

Poisoning myths

Per the myth, **almonds** contain cyanide and will kill your pet. This myth does have some truth behind it. Bitter almonds do contain cyanide. However, we eat sweet almonds which contain no cyanide. Bitter almond essential oil may be purchased but because it has been processed, there is no poisoning risk. **Pistachios** are poisonous to pets. This myth is all over the internet if you google 'pistachios and dogs.' There is no basis to this myth. Nuts can certainly cause GI upset, but are not considered poisonous. **Tennis balls** can explode and kill a dog. This myth is unfortunately true. In 2000 a dog in Portland, OR picked up a tennis ball during a walk and it exploded killing the dog. The ball had been made into a bomb. Per the Portland police, tennis ball bombs are not uncommon and information on how to make them can be found on the internet. They caution people to leave found tennis balls alone, especially if they are wrapped in electrical or duct tape. Tennis balls contain lead. Tennis balls themselves do not contain lead, but there have been inks used to print logos on the balls that have tested high in lead.

Tina Wismer, DVM, MS, DABVT, DABT
NE VMA Conf, 01:19

Use of probiotics

Data from human and animal studies suggest that probiotic administration may protect from antibiotic-associated gastrointestinal signs (AAGS), such as diarrhea and/or vomiting. In such cases, the administration a few days before or at least at the beginning of the antibiotic regimen is recommended for better chances to prevent AAGS. Similarly, probiotics may be particularly useful in preventing ***stress diarrhea***, and administration a few days before the inciting stressful event is recommended. While probiotics have shown some benefits as either sole therapy or in connection with dietary manipulations in stress diarrhea and mild to moderate forms of chronic GI diseases, their use in more severe forms of chronic GI disease should be ancillary to standard therapy.

Jan S. Suchodoiski, MedVet, DrMedVet, PhD, AGAF
N Amer Vet Conf, 02:17

Femoral head ostectomy

Although it has been widely proven and accepted that femoral head ostectomy (FHO) (inappropriately named because femoral neck must be removed also) will not result in a normal gait, it has been a standard procedure to treat many hip conditions that cause unacceptable pain, lameness, and suffering. While weight bearing may be significantly altered following FHO, activities of daily living are not considered to be unsatisfactory. Ultimately, quality of life is widely accepted by clients to be good to excellent after an FHO procedure. Thus, FHO remains a versatile tool in the treatment of many hip pathologies in veterinary medicine. Recovery following FHO can be enhanced through physical rehabilitation focused on encouraging early, controlled weight bearing to mitigate muscle atrophy and encourage proper hip pseudoarthrosis formation. While FHO can offer comfort to a patient, outcome and limb use will not be as good as that with a total hip replacement. Complete removal of the femoral head *and* neck are vital to a good outcome. The ***most common mistake*** with performance of FHO, involves failure to remove some or all the femoral neck.

Nina R. Kieves, DVM, DACVS, DAVSMR, CCRT
VMX, 02:18

Alpha-2 adrenergic agonist myths

1) Alpha-2 agonists are very dangerous and are not appropriate for most patients. Alpha-2 agonists actually have a very wide safety margin and are appropriate for many patients. Plus, they are reversible, which provides a 'safety net' if adverse events do occur. Of course, alpha-2 agonists are not appropriate for patients with cardiovascular disease. 2) Alpha-2 agonists cause bradycardia, which causes hypotension. The bradycardia caused by alpha-2 agonists is actually a normal physiologic reflex that occurs in response to alpha-2 receptor mediated vasoconstriction and hypertension. The decreased heart rate decreases cardiac work, which is a good thing! 3) The effects of alpha-2 agonists must always be reversed. Not true! Reversal is an excellent safety net or convenience factor but many patients (think barking dogs!) benefit from alpha-2 mediated sedation. If they are recovering well and are in a location where they can be observed, it might be a good idea just to let them sleep. And remember that reversal also eliminates any alpha-2 mediated analgesia. 4) Alpha-2 agonists should not be administered to patients over 7 years of age. There is no magic at 7. If the patient could benefit from a potent sedative that is reversible and provides analgesia then the patient should have that sedative no matter what age it is. Only cardiovascular disease – not age – precludes the use of alpha-2 agonists. Alpha-2 agonists can be used safely in older dogs with healthy hearts.

Tamara Grubb, DVM, PhD, DACVAA
Atlantic Coast Vet Conf, 10:17

Maropitant for parvovirus and acute pancreatitis

There is evidence that the NK1 receptor antagonist, maropitant is effective in canine visceral pain model. Other studies have shown maropitant given to ovariohysterectomy dogs resulted in a more robust return to nutrition following the surgery. Since this drug is not controlled as are the narcotics it makes it a desirable home therapy. The NSAIDs are contraindicated in parvovirus and pancreatitis because of both the ulcerogenic and nephrotoxic side effects.

David c. Twedt, DVM, DACVIM
North American Vet Conf, 02:17

Treating the senior dog's sleep-wake cycle

If a dog has an altered sleep/wake cycle, addressing it is paramount because of the high likelihood that the owner's sleep is also disrupted — and owners who aren't sleeping well have difficulty making decisions about

their pets' care. Administering a nighttime combination of trazodone, a benzodiazepine and melatonin will usually get dogs sleeping through the night within a matter of days: this, in turn, may allow dogs to be more alert during the day. The author also considers medications such as selegiline for dogs whose clinical signs warrant it. However, it's important to note that this drug is a MAO inhibitor, which can be complicated to prescribe with other medications the pet may be taking. For example, trazodone and selegiline may increase the risk of serotonin syndrome. For dogs on selegiline, we might limit the nighttime regimen to a benzodiazepine and melatonin.

Marie Hopfensperger, DVM, DACVB
Clinician's Brief, Supp, Jul 2019

Heartworm and owner relocation

The American Heartworm Society (AHS) document states that all dogs should be tested for heartworm disease before travel. If testing isn't possible or test results aren't immediately available, then relocation should be postponed until testing is completed. If a dog tests heartworm-positive, treatment should begin right away, before the animal travels, particularly because infection can leave a dog too unstable for travel. However, if treatment is impossible at the time, then at minimum a macrocyclic lactone preventive and doxycycline therapy should be administered. By preventing circulating microfilariae from growing into adult worms, a preventive reduces the patient's worm burden and stops disease transmission to other animals. Doxycycline reduces inflammation from dying worms. A topical permethrin-based insecticide product is also recommended before travel to prevent disease transmission by disrupting the mosquito life cycle. Upon arrival, the AHS-recommended treatment protocol should be instituted. Retesting after arrival is not recommended, because preventive and doxycycline treatments can both cause false-negative antigen test results. Dogs that test heartworm-negative before travel may still suffer from prepatent infection. For these dogs, a preventive should be administered before travel and retesting should be performed 6 months later. In the meantime, preventive should continue for every pet, every month, all year round.

Brian Herrin, DVM, PhD
DVM News Magazine, Aug 2019

Confirming platelet count with manual estimation

The importance of taking the time to confirm an automated platelet count with a manual estimation cannot be stressed enough. This author sees many cases of suspected thrombocytopenias based on instrumentation counts when in fact there are plenty of platelets found on blood smear evaluation. Discrepancies may be due to instrument inaccuracies and/or poor venipuncture techniques. Without smear evaluation to document the discrepancy, platelets are thought to be truly decreased. Whether clinical bleeding is present or not, many veterinarians may feel compelled to treat these animals for various causes of thrombocytopenias, such as tick-borne diseases and immune-mediated thrombocytopenia (IMT). This can lead to unnecessary treatments that may actually make a healthy animal ill. If a true thrombocytopenia is confirmed, and there are associated clinical signs of hemorrhage, further diagnostics can then be performed (e.g. PCR, bone marrow aspirate, etc.) to determine the correct drug treatment plan.

Pete W. Christopherson, DVM, PhD, DACVP
WI VMA Conf, 10:18

Guinea pigs and Salmonella

Although most cases of human salmonellosis in the United States have been attributed to contamination of food with animal feces, cases of human salmonellosis associated with pet rodents have been documented. This report discussed an 8-state outbreak of *Salmonella* enteritidis infection associated with guinea pigs that resulted in illness in 9 humans. One hospitalization and no deaths were recorded. Clinicians, breeders, and distributors should consider submitting specimens for *Salmonella* spp isolation when substantial diarrhea-associated morbidity or mortality occurs in rodents intended for sale. Clinicians should advise owners of the risks of guinea pig ownership and educate them on the basic precautionary measures to protect them from *Salmonella* spp and other zoonoses. Treating guinea pigs to eliminate carriage of *Salmonella* spp is not reliably successful and may prolong shedding and thus is not recommended.

Radford Davis, DVM, MPH, DACPM
Clinician's Brief, Jun 2019

Diagnosing Bartonellosis

Recently, the development of a more sensitive enrichment culture approach, using BAPGM *(Bartonella* alpha *Proteobacteria* growth medium) followed by real time PCR has greatly facilitated the molecular detection or isolation of *Bartonella* species from the blood of sick or healthy animals, including dogs, horses and human beings. Obviously, the relative sensitivity of the diagnostic methods used to detect *Bartonella* species infection greatly influences an investigator's ability to establish disease causation or a clinicians ability to initiate appropriate treatment. Specifically, the use of this optimized microbiological approach has facilitated the recognition of blood-borne *Bartonella* spp. infections in dogs, horses, human beings and porpoises. Diagnostic testing (animals and humans) for *Bartonella* species (serology, PCR and BAPGM Enrichment Blood Culture/PCR) is available through Galaxy Diagnostics, Inc. (contact@galaxydx.com). In cats, serology, PCR or culture combined with serology is recommended and can be procured at Galaxy Diagnostics Inc. and Colorado State University (www.dlab.colostate.edu).

Edward B. Breitschwerdt, DVM, DACVIM
VMX, Jan 2019