CORNELL COLLEGE OF VETERINARY MEDICINE

DOGWatch

June 2020 - Vol. 24, No. 6

Expert information on medicine, behavior, and health in collaboration with a world leader in veterinary medicine

THIS JUST IN

FDA Recalls Ranitidine

Due to possible carcinogen

On April 1, the FDA requested that all ranitidine (brand name Zantac) products be removed from the market due to contamination with N-Nitrosodimethylamine (NDMA), a probable human carcinogen. They believe "the impurity in some ranitidine products increases over time and when stored at higher than room temperatures and may result in consumer exposure to unacceptable levels" of NDMA. NDMA is present in water and foods and is not harmful at low levels, but higher levels may cause cancer.

Not all ranitidine products have been found to contain NDMA, or even dangerous levels of it, but it has been found that levels increase over time. Higher temperatures can accelerate this process, says the FDA.

Ranitidine is a histamine H2 receptor antagonist and works to reduce the production of stomach acid. It has been used off-label in dogs to treat and prevent ulcers in the stomach and small intestines.

If your dog is currently receiving ranitidine, you should ask your veterinarian about alternative medications to manage his condition.■

INSIDE THIS ISSUE

Alternatives to the Dreaded Cone

Some dogs handle cones with aplomb, others . . . don't

A study at the Sydney School of Veterinary Science looked at alternatives to the use of the classic cone or Elizabethan collar. The collar is used to prevent pets from biting, licking, or chewing at incisions, lesions, or sore spots.

While some dogs adapt well to the cones, especially if the cones are somewhat clear so the dog can see where they are, others have a rough time. It can be difficult for a dog to manage eating or drinking with a cone on. Putting the cone on and off to allow those activities can result in some struggles, too. Dogs can get irritations from the cone, injure themselves, wreak havoc in a room, and even injure their owners as they blunder or panic about.

The study showed that 60% of dogs had trouble drinking water with a cone on, 67% were inhibited playing, 25% were injured (falling downstairs, psychological stress), and 10% couldn't self-groom, use doorways, or sleep comfortably in a crate.

Clever dogs, of course, found ways to remove the cones, despite the best efforts of their owners.

Ask your veterinarian about alternatives to the traditional plastic cone and about fit, so you can look at variations at pet retailers. Inflatable collars, which look like donuts, work well for many dogs. A muzzle might prevent licking and chewing, although these can be difficult to fit well on brachycephalic dogs. Socks, body wraps, and repurposed t-shirts can be fitted to cover skin lesions or incisions to allow healing with comfort. You can also discuss anti-inflammatory medications, pain medications, or sedatives to reduce or remove your dog's urges to lick or chew and eliminate the dreaded collar.■

https://phys.org/news/2020-03-cone-shame-dogs-miserable.html

If you plan to shop for a replacement cone, be sure you understand proper fit.

Westies Working to Save People and Dogs

They're predisposed to idiopathic pulmonary fibrosis

Idiopathic pulmonary fibrosis (IPF) is a deadly lung disease seen in both people and animals, including West Highland White Terriers, which are predisposed to the disease, as are Staffordshire Bull Terriers. In pulmonary fibrosis, the lung tissues become scarred, gradually making it more difficult to breathe. (Idiopathic means "unknown cause.") Symptoms of fibrosis in a dog include wheezing, coughing, breathing difficulties, exercise intolerance, and lethargy.

Drugs for humans do not cure progressive lung scarring. Most people live only three years post diagnosis unless they receive a lung transplant. For dogs, lung transplants aren't an option. Their prognosis is 12 to 18 months.

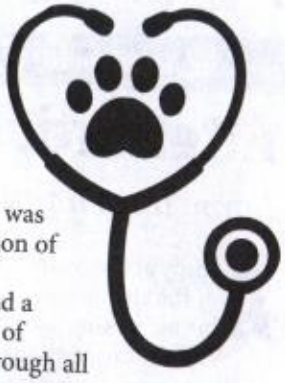
High levels of thyroid hormones can help dogs but with life-threatening cardiac effects. Instead, sobetirome, which has thyroid-like capabilities, may be an option for both dogs and people.

Researchers at Tufts Cummings School of Veterinary Medicine and the Yale University Medical School are collaborating on a trial using Westies and sobetirome.

The 10 Westies in the study get sobetirome at home, with periodic testing to track the results. Hopefully, the drug will provide long-term relief. The study began in late 2019, so we are awaiting results.■

Short-Term Pred and Cardiac Parameters

Dogs seem to do well, without cardiac changes



Many dogs have doses of short-term prednisone over their lifetimes, perhaps for an allergic reaction to an insect bite or to tame an allergic skin-disease outburst. A recent study done at Iowa State University looked at the effects of four different dosages of prednisone (.5, 1, 2 and 4 mg/kg) and the effects on clinicopathologic values, biomarkers for heart problems, and systolic blood pressure using eight Beagles. One concern was whether there was any effect on cardiac parameters, since there is some association of glucocorticoids with heart failure in cats.

The Beagles got prednisone daily for five days and then had a nine-day washout period with no medications. The next dose of prednisone was given for five days. This pattern continued through all four dosage levels. Blood samples and blood pressure measurements were taken before and after the testing periods at each dose level.

At the highest level of prednisone administration, the dogs showed a significant increase in blood glucose levels and in the glomerular filtration rate (GFR), which is a value of kidney function. Increased GFR fits with the diuretic effect of steroids, as has been documented. Other kidney values remained normal. Blood pressure and cardiac biomarkers remained within normal ranges. There were some minor, and expected, changes in some parameters such as serum alkaline phosphatase and triglyceride concentrations.

This study was quite small, and the treatment periods were quite short, which are limitations for solid conclusions. However, it suggests that dogs are more resistant to cardiac effects of glucocorticoids than cats. While further studies need to be done with more dogs and longer dosage schedules, this is good news for dogs facing periodic prednisone use for allergies.

Evaluation of dose-response effects of short-term oral prednisone administration on clinicopathologic and hemodynamic variables in healthy dogs AJVR Vol 81 #4 April 2020

Beware Essential Oils and Your Dog

Some of the formulas have crossed the blood-brain barrier

A recent webinar from the Pet Poison HelpLine, by Charlotte Flint, DVM, DABT, raises questions about essential oils, which are concentrated volatile oils derived from plants and found in many fragrances. Essential oils are readily absorbed, orally, dermally, and through the respiratory tract. Many can cross the blood-brain barrier, which means they enter the brain. Eucalyptus, for example, is a known problem for dogs with seizures, and it interferes with the medication phenobarbital.

Plants are affected by growing conditions, time of harvest, where they are grown, and adulteration by herbicides or pesticides. In essential oils, concentrations and unlisted ingredients may vary from batch to batch. Little research has been done on safety around pets. Dogs can inhale oil vapors and can get the oil on their skin and possibly ingest oil when they lick to groom themselves. Side effects of many essential oils include gastrointestinal upsets, mucous membrane irritation, and photosensitivity or irritant actions on the skin.

With flea season upon us, we want to remind you that pennyroyal, pictured, is a known dangerous essential oil for dogs. Years ago, it was recommended for flea control until the side effects became known. The toxic ingredient is pulegone, which is poisonous to the liver. There have been deaths of dogs who were exposed orally and via the skin to too much pennyroyal.■

DOGWatch

EDITOR IN CHIEF
William H. Miller, VMD, Dipl ACVD,
Emeritus, Professor, Clinical Sciences

EXECUTIVE EDITOR
Cynthia Foley

TECHNICAL EDITOR
Debra M. Eldredge, DVM

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Cornell University
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Veterinary Medicine

For information on pet health, visit the Cornell University College of Veterinary Medicine, website at vet.cornell.edu

Send reader questions and letters to the editor:
DogWatch
535 Connecticut Ave.
Norwalk, CT 06854-1713
dogwatcheditor@cornell.edu

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Tools to Combat Arthritis

A multimodal approach can ease pain and progression

Just like us, arthritis is often an inevitable part of aging in dogs. "Many to most of our dogs develop osteoarthritis for one reason or another as they age," says Christopher W. Frye DVM, DACVSMR, CVA, Assistant Clinical Professor and Section Chief Sports Medicine and Rehabilitation at Cornell.

"Because this is an irreversible disease, we try to alleviate the discomfort and dysfunction associated with it as well as delay the rate of progression. The first step is recognizing the problem and discussing changes in your dog's function with your veterinarian or veterinary specialist," says Dr. Frye. "Ultimately, having a diagnosis and discussing the best strategy to optimize function and comfort is paramount."

Diagnosing osteoarthritis is usually done by veterinary exam along with radiographs (x-rays) to view changes in the bones and joints. In some cases more advanced imaging, such as computed tomography (CT) or magnetic resonance imaging (MRI), may be used.

Once your dog has been diagnosed with arthritis in one or more areas of her body, it is time to formulate a plan that fits her unique needs. "We should remember that each presentation of osteoarthritis may be different for different dogs and consider the patient as a whole: how is their systemic health, what parts of the musculoskeletal system are affected, what are the pet's and family's goals for function at home, where does the dog live (slippery floors, stairs, icy winters). We find the most success with a multimodal and holistic patient approach," says Dr. Frye.

Swimming is a great way for your older dog to exercise those stiff joints with the least amount of concussion.

Treatment options for osteoarthritis run the gamut of veterinary medicine, from surgical intervention to all types of more conservative medical management. "Medical management may include a combination of weight management, pain management, supplement therapy, and physical therapy/exercise modification," says Dr. Frye.

Low-Impact Exercise

Safe exercise is one of the cornerstones of osteoarthritis management. Keeping your dog moving keeps her joints moving, which circulates the synovial fluid to facilitate the exchange of wastes and nutrients in her cartilage. Weight-bearing is also important for maintaining bone health and normal bone structure.

The easiest form of low-impact exercise is a good old-fashioned walk. Take your dog for walks as long as she can handle walking happily without being sore. Multiple walks throughout the day are ideal. Footing that has some give, such as grass or dirt, will be easier on her than asphalt or cement.

Underwater treadmill work is an excellent form of low-impact exercise and has some added perks. The buoyancy of the water allows your dog to move without carrying all of her weight, and the resistance gives her a higher-quality workout than the same duration on land.

Swimming is also excellent low-impact exercise. To learn more about the benefits of underwater treadmill therapy and swimming, see "Rehab: Let's Get Wet" in our July 2018 issue.

Your veterinarian also may give you some home exercises to do to increase flexibility, improve spatial awareness and balance, and strengthen your dog's injured limb(s).

Lifestyle Management

You can do several things to keep your arthritic dog comfortable. "We know that keeping your dogs at an ideal weight is extremely important and can slow down the development and severity of osteoarthritis as well as increase weight bearing on the affected limbs," says Dr. Frye.

Excess weight puts extra strain on your dog's joints. If those joints are compromised and pressure on them is painful, added weight increases the dog's discomfort. As the weight is lost, using the affected limb will be less painful and encourage the dog to use that leg more.

What You Should Do

Is your arthritis toolbox complete?

- Flexibility exercises
- Frequent exercise like walks
- Joint injections
- Oral prescription medications
- Ramps to get in cars, go up stairs
- Rehab therapies like cold laser
- Thick, warm padded bed
- Non-slip rugs over slippery floors
- Swimming, underwater treadmill
- Weight loss management

Recommendations for Arthritis Prevention

Start with good genetics and structure. When possible, choose a puppy or dog from parents who have had health clearances done to evaluate at least their hips and elbows for signs of dysplasia. These genetic conditions predispose the dog to arthritis later in life.

Keep your young dog at her ideal weight and provide lots of low-impact exercise to keep her moving without putting lots of stress on her joints.

Talk to your vet about starting a joint supplement like glucosamine, chondroitin, or hyaluronic acid when your dog is a young adult. It is easier to protect the cartilage she has than to try to rebuild it after it has been damaged.

Your arthritic dog will greatly appreciate a comfortable, warm bed he can call his own.

Weight loss is most successful if you combine decreased calorie intake with increased exercise. Cut back on extra treats and/or switch to lower-calorie options such as baby carrots. Make walks part of your daily routine, increasing the length of time gradually.

Make sure your dog has a warm and dry place to rest, ideally with a thick padded bed to lie on. Just as in humans, cold and damp can exacerbate discomfort from arthritis. Lying on a padded bed helps to prevent the development of pressure sores if your dog tends to prefer one position to favor a sore leg.

Provide good footing so that it is easy for your dog to get up and walk around in the house. Aging muscles can't generate as much force as they used to, which can make navigating smooth floors more difficult. Non-slip floor rugs placed strategically on hardwood or tile can work wonders. In the winter, try to keep your dog off of ice outside or use booties that give her better grip.

Use ramps to help your dog navigate stairs, get in and out of the car, or even get on and off of furniture safely. Teach your dog to walk across the ramp flat on the floor first, then gradually raise one end. There is often a learning curve, but most dogs prefer having a ramp once they get used to it!

Raised food and water dishes may also help, particularly if your dog has arthritis in her spine. Experiment with different heights to see what is most comfortable for her. (Note: Some studies indicate raised bowls may increase the risk of bloat.) Signs of comfort include lingering longer at the bowl and being physically relaxed rather than tensing her muscles.

Pain Management

While keeping your dog lean and active and making adjustments around the house can go a long way toward making a dog with osteoarthritis comfortable, extra pain control is often needed. "Veterinarians may use a combination of pain management options from oral medications and joint injection therapies to modalities such as shockwave or therapeutic laser," says Dr. Frye.

"Here at Cornell, we see many patients that have intolerance to traditional oral pain medications, and we can help them with new treatments that have scientific support in dogs such as orthobiologic joint injections (platelet-rich plasma or stem-cell therapy) and modalities like extracorporeal shockwave. Such interventions also help in patients that need more support than traditional pain management provides."

Some of the common medications that may be prescribed for your dog include the nonsteroidal anti-inflammatory drugs carprofen, meloxicam, deracoxib, and ketoprofen; the neuropathic pain medication gabapentin; and grapiprant, a newer NSAID that works a little differently and has fewer side effects. In some cases, corticosteroids may be prescribed to provide pain relief if your dog does not tolerate NSAIDs.

Medications can be injected directly into the problem joint to provide lubrication, promote tissue repair, or relieve inflammation right at the source. The plus to this treatment is that it is targeted therapy, drastically reducing the potential for systemic side effects. The downside is that joint injections must be done with sterile technique to prevent infection, so your dog will need to be sedated and have the area shaved. Common joint injections include platelet-rich plasma, stem cells, hyaluronic acid, and steroids. Platelet-rich plasm (PRP) and stem cells are harvested from your own dog (PRP coming from the blood and stem cells from fat or bone marrow) so that her immune system won't react to the treatment.

Physical rehabilitation modalities that can be used for pain management in osteoarthritis include pulsed electromagnetic field (PEMF) therapy, extracorporeal shockwave, electrical stimulation, and therapeutic laser. These are all still relatively new therapies, so there is still much research to be done to determine effectiveness and ideal treatment protocols, but if they're available in your area they can be worth trying to see if they benefit your dog. "We are always investigating new therapies and solutions for osteoarthritis pain (the role of cannabinoids, radiofrequency nerve ablation, and more) as it is sadly such a prevalent issue," says Dr. Frye. ■

Did You Know?

Dogs usually keep the more painful leg up when they lie down, with the better leg folded under the body.

FDA OKs Simparica Trio

It contains three drugs

On March 2, the Food and Drug Administration (FDA) announced it had approved Simparica Trio, a chewable tablet that contains sarolaner, moxidectin, and pyrantel. The drug is indicated to prevent heartworm, kill flea infestations, control ticks, and to treat and control roundworm and adult hookworm infections in dogs. ■

Elbow Osteoarthritis Treatment Study at Cornell

If your dog has bilateral elbow dysplasia, she may be eligible to participate in a study at Cornell. "We've developed a new, synthetic, joint lubricant (called Lubrisynth), which, when injected into the joint with arthritis, should aid in reducing pain and improving mobility without needing drugs such as NSAIDs (non-steroidal anti-inflammatory drugs)," says the study description. All costs are covered for the study, including force plate analysis, CT scan of the elbow joints, and joint injections. Several follow-up appointments are required. For more information, see https://www.vet.cornell.edu/hospitals/clinical-trials/new-treatment-osteoarthritis-canine-elbow

Mast Cell Tumors Can Be Tricksters

Checking your dog for odd lumps can be critical

Mast cell tumors are the most common skin growths seen in dogs, accounting for 16 to 21% of all skin tumors. Boxers and Boston Terriers make up over 50% of all canine cases, according to the American College of Veterinary Surgeons, but any dog can develop a mast cell mass. Other breeds commonly associated with these cancers include brachycephalic dogs (Pugs, Boxers, Bulldogs, Boston Terriers), Golden Retrievers, Labrador Retrievers, Weimaraners, Beagles, Rhodesian Ridgebacks, Schnauzers, and Chinese Shar-Peis.

"Mast cell tumors in dogs can be great pretenders and look like a variety of masses. The most common presentation is a papule to nodule elevated above the skin's surface with a pink-to-purple color," says William H. Miller Jr., DVM, DACVD, Professor Emeritus of Medicine, Section of Dermatology, Cornell University. That appearance fits a multitude of skin growths making this truly a "tricky" cancer to diagnose on site. Plasmacytomas and histiocytomas are two of the tumors that can look exactly like a mast cell mass.

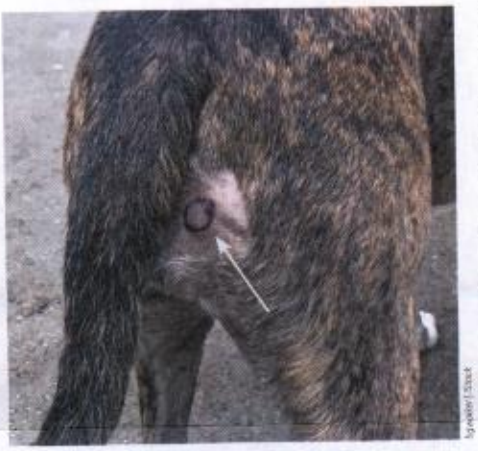
Some mast cell tumors appear as raised, often flabby, areas in the skin, complete with normal hair covering. These growths may be somewhat inactive and remain static for months or longer, making them easily mistaken for lipomas, a generally benign fatty lump.

Mast cell tumors may show up as single masses or they may occur in groups on your dog. Boxers and Pugs tend to have multiple masses. The skin over and around them may appear normal, might have a pink/purple cast or may be ulcerated.

Growth and Spread

Mast cell masses can also occur in the spleen, liver, gastrointestinal tract, and bone marrow. Metastasis from skin growths tends to occur in the spleen, liver, and lymph nodes.

Most cutaneous mast cell tumors are found on the dog's main body, although they may be found on the legs and head, too. The growths may be small and movable (you can pick up the skin and feel under them) or they may be firmly attached to the subcutaneous tissues.



The mast cell tumor on this dog is malignant. The perimeters were marked, and the tumor was injected with a steriod in the hope that it would shrink prior to being removed.

Some of these lumps feel smooth, looking like non-healing areas of swelling and redness that may seem to "heal" and then return.

The Ryan Hospital at the University of Pennsylvania explains this well: "Many owners will report a waxing and waning size of the tumor, which can occur spontaneously, or can be produced by agitation of the tumor, causing degranulation. Mast cells contain granules filled with substances that can be released into the bloodstream and potentially cause systemic problems, including stomach ulceration and bleeding, swelling and redness at and around the tumor site, and potentially life-threatening complications, such as a dangerous drop in blood pressure and a systemic inflammatory response leading to shock."

Histamine releases may cause your dog to rub or scratch at the growth, which can irritate the mass and cause it to release more substances into the dog's body. It's important to immediately stop your dog—or anyone else—from irritating the growth and schedule a veterinary visit.

Diagnosis

Diagnosing a mast cell tumor is usually a multi-step process, and many veterinarians have differing methods or systems to follow.

The first step, however, is usually a simple needle aspirate, which means using a hypodermic needle to take cells out of the mass for examination and diagnosis. This cytology is routinely done right in your veterinarian's office.

However, oncologist Joseph A. Impellizeri, DVM, DACVIM, MRCVS (Cornell 1994) of Veterinary Oncology Services, PLLC at Guardian Veterinary Specialists, Brewster, N.Y., and Wood River Animal Hospital, Wyoming, R.I., believes it is important to confirm the diagnosis and obtain a grade using histopathology (biopsy).

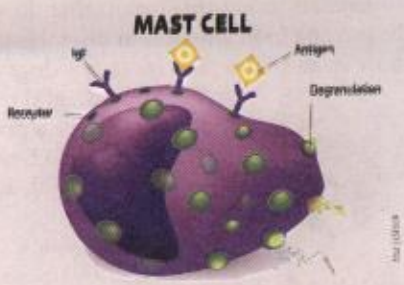
When doing the biopsy, your veterinarian will carefully make the excision with very wide margins around the growth to help prevent, or at least slow, any regrowth of the tumor. You can expect your dog to have a much bigger incision than the mass you felt in his skin.

In many cases, the additional use of a mast cell panel may help guide both the diagnosis of the mast cell tumor and the management of your dog. This panel uses special testing methods and stains to evaluate cell rate of reproduction, growth factors, and the presence of certain proteins and mutations to help determine prognosis and assigning a grade and stage to the tumor. It may also influence the treatment plan for an individual dog.

The Michigan State Veterinary

What Are Mast Cells?

Mast cells aren't bad, but like anything in the body, it can experience abnormal growth that is cancer. Mast cells are a type of white blood cell, part of your dog's immune system. They are usually associated with allergic reactions as they contain granules with enzymes like histamine in them. Mast cells are also part of your dog's inflammatory response. They react to allergens by producing IgE (immunoglobulin E) in response. IgE helps mediate the allergic response.



Among the mast cell's normal duties in the body is combating allergens.

Diagnostic Laboratory offers Ki-67, AgNORs, and c-Kit PCR to cover all grades of these cancers.

The Ki-67 and AgNORs tests are used mostly for Grade I and Grade II mast cell tumors. Ki-67 determines the number of proliferating cells. The number of AgNORs correlates with the speed of cell proliferation. The PCR testing is primarily done for very aggressive cancers and looks at mutations to help to predict if tyrosine kinase-inhibiting therapy may be beneficial.

Grading

Based on the histopathology, your dog's mass will be "graded." Grade I is the least aggressive and least likely to have spread to other tissues. A grade II tumor is larger and deeper and may have spread to surrounding lymph nodes.

"This is the most unpredictable grade and the most confusing for owners," says Veterinary Cancer & Surgery Specialists in Milwaukie, Ore. "Most low grade II mast cell tumors are also curable by complete surgical removal, but high grade II tumors may behave more aggressively and require additional treatment."

As you may imagine, Grade III tumors are quite aggressive. These tumors are the most likely to have metastasized, with preferred sites being regional lymph nodes, liver, spleen, and bone marrow.

Grade II and grade III tumors are often also "staged," which means determining the extent of the tumor and looking for metastases. The staging process requires aspirates from regional lymph nodes, radiographs of the chest, and ultrasound and/or radiographs of the abdomen. A bone marrow sample may be collected, and circulating white blood cells will be evaluated for the presence of mast cells.

Treatments

Surgery may be curative for a dog with grade I growths. Once the grading or stage moves beyond that, other treatments may be recommended. "Surgical removal of the tumor in many cases may provide a cure. Incomplete removal requires further treatment. Additional modalities for incomplete resections include radiation therapy and electrochemotherapy," says Dr. Impellizeri.

"Distant metastasis and high-grade status portend a guarded prognosis. Dogs with these cancers will likely need additional therapies beyond surgery such as chemotherapy and possibly the oral tyrosine kinase inhibitor, Palladia. Even with these grave findings, many dogs will respond to therapy," says Dr. Impellizeri.

Chemotherapy using vinblastine combined with prednisone has proven valuable for some dogs. Radiation therapy may be used as a follow-up for cancer cells detected at the margins of the incisions. Radiation may be especially useful for any mast cell cancers on the extremities where it is difficult to get a wide margin of clear skin.

Even if surgery is curative, some medications may be dispensed to help with side effects of the cancer while your dog heals. These include antihistamines such as diphenhydramine/Benadryl, antacids like famotidine/Pepcid or omeprazole/Prilosec, and corticosteroids (prednisone). These treatments will help to mitigate the effects of the mast cell granules that have injured tissues outside the mass itself.

Prognosis

The future looks good for dogs with grade I and grade II tumors that are completely removed via surgery. Even if follow-up radiation therapy is necessary due to the cells in surgical margins, 90% of these dogs will have no recurrence for at least three years. Sadly, dogs with a grade III have a grave prognosis. The cancer will most likely recur and/or metastasize.

Be prepared for the fact that, if your dog has had one mast cell tumor, he may develop others in the future. This is not considered metastasis. Caught early on, prognosis can continue to be good.

Bottom line? "Have any new skin lesions aspirated by your veterinarian," says Dr. Impellizeri. "You miss more by not looking than by not knowing," he says. There are options available. Your veterinarian will not be offended if you ask for a referral to a specialty oncology clinic—and he or she may recommend you do just that—if you remain concerned and want a second opinion. ■

Lumps Change Size

Due to the histamine, owners may report that the skin growth can rapidly increase in size or go "back to normal." This is from any irritation of the mast cells leading to degranulation, with histamine spilling into the tissues along with vasodilatory agents.

Food Allergy Testing Unreliable

Disappointing results in two separate studies

Two 2019 studies, one done in Europe and one at Tufts University, evaluated some of the blood and saliva testing options currently available for food-allergy testing. The goal was to validate whether or not the tests gave clinically relevant results.

Both studies had lots of positive reactions from dogs with all testing methods, with each positive result in theory indicating that the dog has a food allergy to that ingredient. The problem? Many of these positive results came from dogs who are perfectly healthy and don't show any sign of allergies. Other dogs with known food allergies diagnosed through elimination diets did not always come up positive on these tests.

Unfortunately, this means that these tests may not be a reliable means of diagnosing food allergies in dogs. Healthy dogs with no sign of any allergies can show up as a false positive (a few dogs in the Tufts study came up positive for every antigen tested), and true positives can come up as a false negative. If food allergies are a potential issue for your dog, working with your veterinarian to do food trials with elimination diets is still the gold standard for getting an accurate diagnosis that will help your dog feel better. ■

Udraite Vovk L, Watson A, Dodds WJ, et al. Testing for food-specific antibodies in saliva and blood of food allergic and healthy dogs. Vet J 2019;245:1-6. Lam ATH, Johnson LN, Heinze CR. Assessment of the clinical accuracy of serum and saliva assays for identification of adverse food reaction in dogs without clinical signs of disease. JAVMA 2019;255:812-816.

Get a Grip on Runny Eyes

The goop, the drip, and the crusty

If your dog's eyes are normally clear and bright and he is suddenly squinting and has a discharge from one or both eyes, the first step is to check for debris in the eye. Any number of tiny objects can get stuck under the eyelid, including grass, seeds, hair, and even food particles. Gently hold your dog's head and open each eye using your thumbs so you can look for any debris (items usually get lodged in the corners of the eye, but can be anywhere under the eyelid).

If you can see something in your dog's eye, or he won't let you get a good look, flush the eye out with artificial tears. These can be purchased at any drug store or pharmacy and are a good thing to keep on hand.

In most cases, flushing will remove the foreign body from the eye and your dog will be back to himself in no time. If the discharge persists, however, or if he continues to squint or paw at his eye, a veterinary visit is in order to make sure the debris didn't damage the cornea.

Debris can block your dog's nasolacrimal ducts, tiny tunnels that allow excess tears to drain out of the eye and into the nasal cavity. These ducts are located at the corners of your dog's eyes that are closest to the center of his face. If these ducts are blocked, excess tears have nowhere to go, and instead spill out over the eyelid and track down the side of your dog's muzzle as if he is crying. Over time, the tears can cause an orange-brownish stain on your dog's face.

The nasolacrimal ducts can be flushed to clear them. This is a minor procedure, but your dog may need to be sedated.

The telltale sign of chronic runny eyes: that brownish rust stain.

Ulcers and Abrasions

Dogs can damage their corneas, the clear outer layer of the eye, by running through brush, scratching the eye, or getting something stuck in the eye that scrapes across the cornea. These abrasions are a perfect little spot for bacteria to set up an infection camp. These tiny pockets of infection can become ulcers, slowly eating away at your dog's cornea. In extreme cases, the ulcer can go all the way through and rupture the eye.

As you can imagine, scrapes and ulcers on the eye are painful. Your dog is likely to squint and to have discharge as the eye tries to flush out the infection and bring nutrients to the damaged cornea. This discharge can range from clear and thin to thick yellow or greenish. He may also paw at or rub his face.

Your veterinarian can apply a small amount of fluorescein stain to the eye to look for scratches and ulcers. The stain will wash off the intact cornea but stick in any damaged areas. Once an ulcer has been diagnosed, treatment may include topical drops and ointments to relieve pain and resolve the infection. In severe cases, systemic antibiotics and/or a corneal graft may be necessary. For more information on ulcers, see "Corneal Ulcers" in our December 2018 issue.

A dog with a thick discharge (see corner of eye and lower eyelid) could have an eye ulcer.

Dry Eye

Keratoconjunctivitis sicca, aka KCS or "dry eye," is a condition in which your dog's eyes do not produce adequate tears. Tears are made up of water, mucin, and lipids, and any imbalance in their composition can cause trouble. If your dog is not producing enough of one component, his body will compensate by producing extra of another.

Most dogs with KCS have thick, mucousy discharge from one or both eyes. The eyes may also appear bloodshot and, if left untreated, can progress to being cloudy with pigment or blood vessels growing across the clear cornea.

Dry eye is often an auto-immune condition, but it also can be caused by systemic diseases (including distemper and hypothyroidism), inner ear infections, or as a side effect from sulfa drugs. In most cases, KCS will require lifelong treatment with topical medications to keep the eye lubricated and healthy. For more information on KCS, see "Big Dogs Don't Cry" in our May 2018 issue.■

Upper Respiratory Infections and Runny Eyes

Dogs battling an upper respiratory illness often get runny eyes just like we do. This discharge is usually thin but copious and accompanied by other symptoms, such as sneezing, sniffling, difficulty breathing, nasal discharge, coughing, fever, lethargy, and inappetance.

Upper respiratory disease can be caused by a wide variety of pathogens, including Bordetella bronchiseptica (kennel cough), canine influenza, parainfluenza, distemper, and adenovirus. If your dog has runny eyes along with other symptoms of respiratory illness, let the veterinary staff know. They may ask you to bring your dog in through a different door to reduce the risk of spreading the infection.

Depending on the severity of your dog's illness, he may be provided with some supportive care such as subcutaneous fluids as well as started on symptomatic treatments. A throat swab can be collected to identify the exact cause of the infection and further refine the treatment plan. In most cases, the runny eyes will resolve as the infection is addressed.

Barking Out the Window

Dogs never bark for no reason

Q We have a 2-year-old Cardigan Corgi. Sadie barks at everything she sees out the window from cars to people to dogs to squirrels to rabbits to everything. And she is especially bad in the car. Is this indicative of the breed or do we have an overactive Corgi?

A No, you don't have an overactive Corgi! You have a very attentive one. Dogs bark for a variety of reasons, such as to request that the invader go away, to demand a treat, or to be let in. Or, as my Westie does, to call for help when left alone or when stimulated, especially by something unobtainable. There is probably a degree of frustration to that bark because she can't chase the people or prey animals.

The key thing in your case is that she sees something, whether cars and people outside the car window or rabbits and squirrels outside your window. I don't think we can or should decrease her excitement, but we can keep her from seeing things.

She should be in a crate or a tube or tunnel in the car. The tunnel is a relatively new gadget that keeps the dog on the floor of the car where she can't see out. It seems to calm many dogs. She will not be able to jump on you or get thrown around if you have an accident.

In the house, you can keep shades drawn or curtains pulled or, if you don't want to live in the dark, you can put window cling film on the windows at her height so light can come in, but she cannot see out. If she climbs on furniture to see out you can move the furniture or barricade it.

There are all sorts of gadgets to punish barking from ultrasonic devices to shock collars, but I would not go that route. You can teach "Quiet." Pay careful attention to her when she is barking and just as she stops (the squirrel disappears or the car goes by), say "Quiet" and give her a treat. It will take many times—probably 20 to 30 episodes of rewarding not barking. Your veterinarian should be able to recommend a positive trainer who could help you.

Enjoy Sadie; she sounds like a normal—keen observer of the environment—Corgi.■

Do You Have a Behavior Concern?

Send your behavior questions to Cornell's renowned behavior expert Katherine Houpt, VMD, Ph.D., shown here with Yuki, her West Highland White Terrier. Email to dogwatcheditor@cornell.edu or send by regular mail to DogWatch, 535 Connecticut Ave., Norwalk, CT 06854-1713.

Coming Up ...

- *What Is Electrochemotherapy?*
- *AAACCK! Stop All That Coat Licking!*
- *What You Need to Know: Ear Mite Infections*
- *Puppy Time! Do You Choose a Boy or a Girl?*

Two Types of Corgi Dogs

Purebred Corgis can be either Pembroke Welsh Corgis or Cardigan Corgis. Both are dwarf dogs with large bodies and small legs. Both are herding dogs and both originated in Wales, but in different areas. Historically, the Cardigan is 2,000 years older than the Pembroke, but the Pembroke is the one that stole Queen Elizabeth II's heart when her father brought one home to her when she was a little girl.

Both dogs are about the same size, weighing in as adults around 30 to 35 pounds. Both types have upright ears, although the Cardigan's are slightly larger. According to the American Kennel Club, "The acceptable coat colors are more varied for the Cardigan. They come in brindle, black, and white with brindle or tan points, red and sable with white markings, and blue merle. The only coat colors for the Pembroke are red, sable, and tricolor with white markings. Cardigans are also less restricted in their white markings than the Pembroke."

Corgis are smart, athletic high-energy dogs. They are surprisingly fast and do well in agility, obedience, and herding.

At top left, a Cardigan Corgi herds sheep. Right, a Pembroke Welsh Corgi works on agility weave poles.

Genes and Mosquito-Born Disease—*JAVMA News* reports that researchers at the University of Pennsylvania School of Veterinary Medicine identified a set of immune genes in a strain of *Aedes aegypti* mosquitoes resistant to infection with *Dirofilaria immitis*, the parasite that causes heartworm disease in dogs.

By activating the immune response in otherwise-susceptible mosquitoes, the researchers stopped parasites from developing into a transmissible form in the insects.

Tinder for Dogs—WKMG ClickOrlando reports that the Orlando Dog Mom Club, METTA Rescue Family, and Happy Trails Animal Rescue are placing dogs looking for a forever home on the dating site Tinder. A OnePoll survey of 2,000 people found that 39% swiped right on a profile because of the dog.■