THE SCOTTIE GUARDIAN

Quarterly Newsletter of the STCA's Health Trust Fund

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Welcome to the fourth edition of the 2022 STCA's HTF Newsletter!

This edition of ***The Scottie Guardian*** brings a variety of topics for your reading pleasure:

- November is National Cancer Awareness month. Be sure to read the information included about cancer in our Scotties;
- Welcome to the newest Trustees on the HTF;
- Congratulations to the lucky winner of the beautiful stained glass panel whose name was drawn at the STCA's Annual Dinner in October;
- Congratulations to the recipient of the Health Advocate Award, Erica Cerny;
- Learn more about the STCA-HTF DNA Bank;
- And more!

As the holiday season approaches, we all have so many reasons to give thanks for our families, our friends, and our wonderful Scotties.

The Trustees send our very best wishes to all of our Scottie friends, far and wide!

Marcia Dawson
Chair, STCA HTF

Be sure to visit the STCA webpage at www.stca.biz for more details on Health and the Health Trust Fund pages, including links to the ScottiePhile Health library and HTF donation pages.

Welcome New Trustees

Dr. Joseph H. Kinnarney

Dr. Joseph Kinnarney, 2015-2016 president of the American Veterinary Medical Association, is a small-animal practitioner in Reidsville, N.C., and president of the Reidsville Veterinary Hospital. Dr. Kinnarney has been a NC resident since he graduated from Cornell University College of Veterinary Medicine in 1980. He served as the District III representative on the Am. Vet. Med. Assoc. (AVMA) Executive Board from 2007-2013 representing veterinarians in NC, SC, AL, MS and TN. He began his term as AVMA president in July 2015.

Dr. Kinnarney's interest in taking a leadership role in his profession started while he was studying at Cornell. He was the president of the Cornell Student Am. Vet. Med. Assoc. (SAVMA) chapter and president of the national SAVMA.

In 1999, Dr. Kinnarney began serving the first of two terms as AVMA vice president, during which time he served as a liaison to veterinary students and recent graduates. He also served as vice president of the NC Vet. Med. Assoc. from 2001-2007, and was the 1991 NC Veterinarian of the Year. From 2002 to 2007, Dr. Kinnarney served as NC's delegate to the AVMA House of Delegates. He was named NC Distinguished Veterinarian in 2006. He is currently the chair of the AVMA trusts.

Dr. Kinnarney's love of animals is not restricted to his work as a veterinarian or in service to the AVMA. In 1995, a Scottish terrier Dr. Kinnarney co-owned won best in show at the Westminster Kennel Club Dog Show. Dr. Kinnarney resides in Greensboro, N.C., and enjoys showing horses and traveling. Dr. Kinnarney has two sons, Joseph and Jeffrey, and four grandsons.

Raymond Formanek Jr.

Since 1999, I have been blessed to live with seven Scotties, including retired show dogs and my first "show puppy" that became an AKC conformation Grand Champion and mother to seven puppies. Four of those pups earned their AKC conformation championships and one has done remarkably well in obedience and agility events.

During two decades as a writer and editor for the U.S. Food and Drug Administration, I worked with Agency scientists, enforcement personnel, and administrators to develop online and print articles, fact sheets, and other communication products for consumers and industry.

Some of the more memorable events included concerns over the Fort Dodge Lyme vaccine for dogs, melamine in dog food, the safety of several flea and tick products, and numerous recalls for treats and pet foods contaminated with E. coli or salmonella.

I also worked with FDA veterinarians on pet care articles such as how to avoid cross-contamination with human food in the kitchen and the basic need to wash pet bowls daily with hot, soapy water to avoid bacterial buildup and contamination.

I joined the STCGW in 2011 and have been a member of the STCA since 2012. I look forward to contributing to the HTF's communications efforts to help keep STCA members aware of and involved with the Board's activities.

We Have a Winner!

CONGRATULATIONS!

On Friday October 7th during the STCA Annual Meeting, the HTF held a drawing for a very special prize. Back in the spring of 2021, Michigan artists Chuck and Judy Gubry created a beautiful 20" x 23" stained glass panel featuring a Scottie head in profile surrounded by deep gem-like colors. Ron and Maurine McConnell framed the panel and together with the Gubrys donated this piece to the HTF. Any Scottie owner who submitted a blood sample to the DNA Bank from April 1, 2021, to September 1, 2022, was eligible for one chance for the drawing. And the lucky winner was Debbie Bittles from Elk Grove, CA!

We would like to express our gratitude to the talented artists who created this beautiful piece and also thank Danica Burge Garside and Lisa KIncheloe who drove the panel all the way across the country to California to its new owner.

It does take a village to make good things happen! We are fortunate to have dedicated Scottie owners who step up and help where needed and who submit their samples to the DNA Bank for the good of all Scotties!

Health Advocate Award

The Antonella Visconti di Modrone Health Advocate Award

The Scottish Terrier breed acquired a life-long advocate when Erica Cerny encountered her first Scottie many years ago. Erica and her husband, Richard, have been devoted to the breed for most of their adult lives, and Erica has made it her personal mission to see that no Scottie is ever neglected and homeless. A member of the Scottish Terrier Club of Greater New York for many years, Erica has been its rescue coordinator for almost as long and has consistently inspired other club members to become involved, leading to the club's outstanding record of placing dogs in need of help into loving new homes.

But beyond this, Erica has also been hugely instrumental in establishing the club's basic rescue policies. A newly surrendered dog never leaves Erica's care and that of her helpers until he's healthy, and this can mean heroic measures, with many a dog undergoing life-saving surgery after surrender to the club. She's also instituted a well-organized program to foster each of these dogs and recruited devoted volunteers to help make this possible. Because of these efforts, every dog's temperament is explored during fostering and each dog leaves the rescue program as healthy as possible, on its way to a home that is well suited to his needs.

Erica is always ready to go the extra mile for a dog in need and has kept dogs as her own when extreme health issues make the dog difficult or impossible to place. Because of her, every rescue Scottie leaves the program to a new, loving home, and sometimes that home is the Cerny house. Through the years, Erica's also become an expert about many health issues that affect the breed and is always ready and willing to help other Scottie parents navigate tough health problems that can arise.

With gratitude for the many Scotties rescued along the way, the STCA HTF is proud to present the Health Advocate Award to a well deserving Scottie Warrior, Erica Cerny. Congratulations!

THE STCA/HTF DNA BANK

The HTF has established a Scottish Terrier DNA Bank with **RESERO GENOMICS** in Salt Lake City, UT for the preservation of Scottie DNA, to monitor genetic and genomic data of the breed, and to provide high quality DNA samples for future research and DNA testing to benefit all Scotties. This one of a kind DNA Bank provides a unique opportunity for all Scottie owners to contribute to the body of Scottie genetic data while maintaining control of their own dogs' DNA. The DNA Bank will serve as an important asset for breeders and researchers, both now and in the years to come.

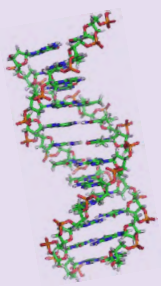
There are over 200 DNA samples of Scotties in the DNA Bank as more and more Scottie breeders and owners make this important contribution to the health and genetic preservation of the breed. At present, some of these samples are part of a project to discover the underlying genomic differences contributing to Scottie Cramp by geneticists and to possibly find a marker that can be used for a future DNA test. This project showcases the great value of the DNA Bank for the Breed.

Contact Marcia Dawson for a free DNA Kit and for information on how the HTF can help Clubs and Scottie groups host blood draw clinics

hijinkscot@gmail.com

For further information regarding why the bank is needed, and how to donate DNA to the bank, please go to:

https://stca.biz/about-the-breed/health/the-stca-htf-dna-bank/



RESERO™ Genomics

Hemangiosarcoma

Hemangiosarcoma

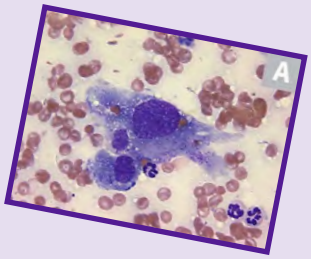
A Ticking Time Bomb

Marcia Dawson DVM

"Canine hemangiosarcoma is among the most challenging and mysterious diseases encountered in veterinary practice." Jaime F. Modiano, VMD, PhD

It's a morning pretty much like any other. Up early, let the dogs out, feed and clean up, make the to-do lists for the day. Nothing seems out of the ordinary or unexpected. But without warning, this day will turn out to be anything but ordinary.

At 9 AM, I notice that my healthy, 10-year-old bitch Rosa has vomited her breakfast. Not in itself an unusual thing for Scotties that tend to graze on anything they find in the yard. But still, not a common occurrence for Rosa. By 10 AM, Rosa is increasingly uncomfortable, panting, then weaker, lethargic, moving slowly. By 10:30 AM I am in the car racing to the vet, certain at this point that something is terribly wrong. But by noon, Rosa is gone.



Hemangiosarcoma (continued)

Gone! This is the stuff that nightmares are made of. Any dog owner who has experienced a scenario as described above is all too familiar with the terrible shock and inability to understand what has happened so quickly to their beloved pet. *How can this happen? There was no warning! She was just fine this morning! What could I do? There was no time to prepare… no precious time to say goodbye.*

Hemangiosarcoma (HSA) is deep and silent and deadly. The term “haeme” is Latin for blood; “angio” is vessel; and sarcoma means cancer of the deeper connective tissues. Put it all together and you have HSA, an incurable tumor arising from the cells that line blood vessels. Most commonly, HSA starts to grow in the spleen or the right atrium of the heart. It can also be located right below the skin, but the more critical forms are deeper in the body. There, HSA grows out of sight, not announcing its presence, causing no pain or obvious symptoms, spreading aggressively to other organs. As with any tumor, a source of nutrition is essential for growth, and so HSA produces its own blood vessels. But these vessels can be tortuous, malformed, and prone to clots and rupture. Small ruptures result in blood loss, but the body can recover and vessels will heal over time. Large ruptures, however, are catastrophic, leading to massive blood loss into the abdomen or into the sac around the heart. The ability to clot is overwhelmed in the face of this massive bleed. The dog goes into shock and bleeds to death internally. Treatment is usually of little use since HSA is diagnosed so late in the course of the disease. Sadly, many times the diagnosis is made postmortem.

Hemangiosarcoma is a relatively common canine cancer. It is estimated that HSA accounts for 5-7% of all tumors diagnosed in dogs, which translates to @ 2 million dogs in the United States. Certain breeds (Golden Retriever, Portuguese Water Dog, Boxer, Skye Terrier, German Shepherd, Boston Terrier among others) are at higher risk for the development of this cancer. The estimated lifetime risk for the development of HSA in a Golden Retriever is one in five, a staggering statistic.

But Scotties are not exempt. Sudden and unexpected death in any Scottie is highly suspect for HSA.

Hemangiosarcoma (continued)

There is hope in the many sad stories and promise for the future. Researchers have learned a lot about hemangiosarcoma in the past 2 decades, and their work continues. Thanks to the generous support and dedication of several national breed clubs with assistance from the AKC Canine Health Foundation and the Morris Animal Foundation, funds have been provided for several major investigations into HSA. These days the canine world is blessed with some of the best minds in genetics and cancer research, using the newest technology available to identify the source and biological behavior of HSA, to investigate cutting-edge, more effective treatments, to seek ways to detect HSA in its earliest stages, and even to prevent this deadly disease in the first place. There is little doubt that one day soon, hemangiosarcoma will give up its secrets.

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Read more about hemangiosarcoma research at the following sites:

http://www.modianolab.org/index.shtml

http://www.goldenretrieverfoundation.org/index.html

http://www.vetmed.vt.edu/clinical-trials/current-studies/

http://www.akcchf.org/research/our-research/

www.morrisanimalfoundation.org

Transitional Cell Carcinoma (TCC)

Presentation Highlights Oncology Research Success

Tuesday, January 26, 2021

Dr. Deborah Knapp, Distinguished Professor and Dolores L. McCall Professor of Comparative Oncology, performs an ultrasound on a dog in the Purdue University Veterinary Hospital. (Purdue University photo/ John Underwood)

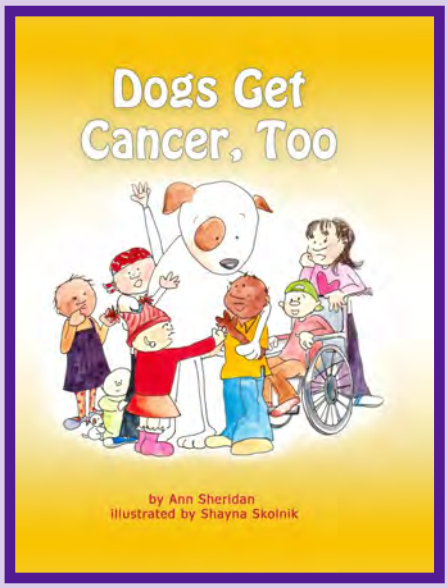
Distinguished Professor of Comparative Oncology and Dolores L. McCall Professor of Comparative Oncology Deborah Knapp recently marked a milestone in her career. As an endowed professor, Purdue University requires Dr. Knapp undergo a review by her department every five years with the latest review completed last month. Dr. Knapp was first named the Dolores L. McCall Professor of Comparative Oncology in 2006 and has held the title ever since. As part of the review, Dr. Knapp was asked to present a seminar highlighting some of her research team's success.

The seminar entitled, "Cancer Prevention in Dogs: Strategies That Can Be Implemented Now to Improve Outcomes," was presented virtually December 11, 2020. After an introduction by Dr. Catharine Scott-Moncrieff, head of the PVM Department of Veterinary Clinical Sciences, Dr. Knapp began her lecture by describing the current state of cancer cases in the United States. Last year, there were 1.7 million new cases of human cancer reported with 600,000 of these resulting in death. As for dogs, approximately 4 million cases were expected in 2020 with the total number of deaths unknown. Dr. Knapp's team has tasked themselves with looking at ways to improve the outcome for humans and dogs.

Transitional Cell Carcinoma (TCC)
(continued)

In describing a key to improving the outcome for both, Dr. Knapp explained that certain forms of naturally-occurring cancer in dogs are very closely related to cancers in humans, allowing treatment methods to be studied interchangeably. In addition to defining cancer by the organ in which it originates (i.e. breast cancer), researchers have found that in many cases they can better define the cancer by its mutations and molecular makeup of the cancer. For instance, a subset of bladder cancer in dogs may be more closely related to colon cancer in people.

Dr. Knapp described that one way to improve cancer outcomes in humans and dogs is to improve the use of current drugs such as Cyclooxygenase (Cox) Inhibitors, also known as Non-Steroidal Anti-Inflammatory Drugs. These drugs have anti-cancer properties and are a good example of drugs that can be repurposed. Additionally, new drugs, such as immunotherapies, are currently being studied. The Purdue University College of Veterinary Medicine has recently received a research grant to improve knowledge of these methods. Another area that has the potential to make a big difference in cancer outcomes for humans and dogs is individualized care.



The primary focus of improvement described in the lecture is prevention. Cancer prevention comes in three forms. Primary cancer prevention is preventing the entire cancer development, such as not smoking to avoid lung cancer. Secondary cancer prevention is the detection of precancerous symptoms with testing such as mammograms and colonoscopies and treating them before they become aggressive cancers. Tertiary cancer prevention is the treatment of cancer once it is diagnosed to prevent morbidity and mortality.

Dr. Knapp focused on prevention in regard to bladder cancer, which most of the time is known as high grade invasive urothelial carcinoma, transitional cell carcinoma, aggressive bladder cancer, or in humans is called muscle invasive bladder cancer – all essentially the same disease. Dr. Knapp said primary cancer prevention for dogs includes limiting risk factors such as the use of lawn care chemicals; obesity; the use of old generation flea, tick, and mange dips; and exposure to second-hand smoke. Emerging data now suggest that exposure to smoking could be important to bladder cancer in dogs. On the other hand, feeding vegetables to dogs can reduce the risk of cancer. There is now evidence to suggest spayed and neutered dogs are more at risk for cancer than dogs that are not spayed or neutered. Dr. Knapp certainly does not recommend ending the practice of spaying and neutering entirely, but said the optimal time for surgery requires further study, and this raises the question of whether waiting until the dog is a year old should be considered. More studies are needed to answer this question.

Transitional Cell Carcinoma (TCC)
(continued)

Dr. Knapp's research team collaborated with the Scottish Terrier Club of America on a three year study of Scottish Terriers, a high-risk breed for bladder cancer. (Purdue University photo/Rebecca McElhoe)

Secondary cancer prevention of bladder cancer can come in the form of early detection of precancerous lesions such as dysplasia and carcinoma in situ. In this stage, the cancer is less advanced and should be easier for the drugs to treat. Additionally, the immune system should be in a more active state to combat the cancer. This prevention strategy was tested by Dr. Knapp and her team in an early detection, early intervention study in which Scottish Terriers, a high-risk breed for bladder cancer, were studied. The study was completed in collaboration with the Scottish Terrier Club of America, which provided funding. The dogs were examined every six months for three years. Preliminary study results show that bladder cancer can be detected early, and early detection does improve the outlook for the dogs. Further evaluation is currently underway by Dr. Knapp and her study collaborators.

There are several key strategies that can be implemented now to improve cancer outcomes. Avoiding factors that increase the bladder cancer risk is important. Early detection and intervention are emerging as vital to improving the outcome for dogs with bladder cancer.

Dr. Knapp earned her DVM degree at Auburn University and in 1985 came to Purdue where she completed her residency and earned a master's degree in 1988. She then became board certified by the American College of Veterinary Internal Medicine (Oncology). She was named a Distinguished Professor of Comparative Oncology by the university in 2020. Dr. Knapp leads the Purdue Comparative Oncology Program and is regarded as the leading expert in the field of naturally occurring bladder cancer in dogs. Her research has established bladder cancer in dogs as the most relevant animal model for invasive bladder cancer in humans. She is the author of more than 100 peer-reviewed journal articles related to the subject.

Lymphoma

Lymphoma in Dogs

Wendy Brooks, DVM, DABVP

Date Published: 01/01/2001
Date Reviewed/Revised: 06/23/2021

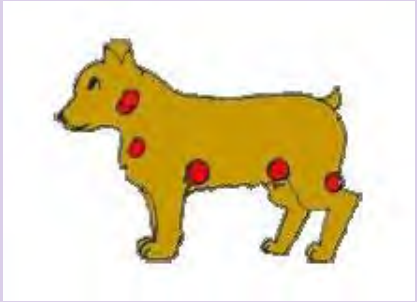
Additional Resources

- Common Lymphoma Chemotherapy Medications for Cats and Dogs
- Lymphoma
- Lymphoma in Cats
- Lymphoma Treatment Includes Nutritional Therapy for Dogs and Cats

The typical canine lymphoma patient is a middle-aged dog brought to the veterinarian because one or more lumps have been found. The veterinarian rapidly determines that these lumps are actually lymph nodes and that many (if not all) of the peripheral lymph nodes (those near the skin surface) are enlarged and firm. Usually the dog has not been showing any signs of illness; he simply has lumps.
The next step is a blood panel and urinalysis to completely assess the patient's health, and one or more lymph nodes are aspirated or biopsied to confirm the diagnosis of lymphoma.

So here we are.

We know the average life expectancy for a patient with untreated lymphoma is about two months from the time of diagnosis. If this is your dog's situation, you probably need some time to absorb the cancer diagnosis. You have many general questions and you know that a decision regarding chemotherapy must be made. We will cover some commonly asked questions owners have at this point.



The spots indicate the location of peripheral lymph nodes in dogs.
Illustration by Dr. Wendy Brooks.

How did my Dog get Lymphoma? Most of the time, we do not know how dogs or people get cancer. There are many types of cancer and many possible causes of all those cancers (chemicals in our environment, especially cigarette smoke, sun exposure, assorted viruses and infections). There are important genetic factors as well.

Lymphoma (continued)

Cancer starts with one or a small group of cells that have gone wrong. Such cells arise in our bodies all the time and we have an assortment of natural mechanisms to destroy these cells before they get out of hand. When these abnormal cells escape our natural mechanisms, cancer develops.

It is important to realize that cancer is not contagious and that, as a pet owner, you should not feel that you somehow caused this or brought it on your pet. Many people feel a need to find blame and latch onto the idea that a household cleaner or pesticide was the cause. This is a natural part of grieving but it is important not to focus on cause unduly. Cause is not relevant to treatment; furthermore, there is no way to verify cause. At this time, there is no way to know what caused lymphoma development in a given patient. Genetically predisposed breeds include the Basset hound, boxer, Golden retriever, and St. Bernard. It is best to concentrate on treatment.

Can my Dog be Cured? Theoretically, yes, but practically speaking, no. It is best to focus on a realistic outcome that is the longest possible survival with a good quality of life. Different treatment protocols are associated with different disease-free intervals, meaning that the length of time your dog feels normal will vary depending on the protocol you choose. The disease-free interval also depends on patient factors (type of lymphoma, concurrent disease, prior treatment etc.). Obviously, the goal is to have as long a disease-free interval as possible.

Does my Pet Need Further Tests? Most likely the answer is yes because there is a great deal more to know before treatment options can be determined. We need to know about the state of the patient's general health and if there are any medications that should not be considered. We need to know what type of lymphocytes are involved. We need to know how far the cancer has spread.

Basic blood work and a urinalysis will be needed to assess the patient's ability to take the medications needed. Obviously liver and kidney function will be relevant, but the blood calcium level is particularly worthy of scrutiny. Some types of lymphoma produce a hormone called PTH-rp (parathyroid hormone related protein) that is capable of creating dangerous elevations in the blood calcium level (see hypercalcemia for more details.) A dog with an elevated blood calcium level tends to have a poorer prognosis. Approximately 15 percent of dogs with lymphoma (and 40 percent of dogs with T-cell lymphoma) have elevated blood calcium levels, so screening is important from the beginning.

If a biopsy has not been performed, it may be a good idea to do one so as to get the maximum information about the tumor (whether it is slow or fast growing, what type of lymphocytes are involved, etc.) as this information can help predict the response to chemotherapy. Special staining of the sample, or even a test such as flow cytometry, is needed to distinguish the type of lymphocyte involved in the tumor. T-cell lymphoma, for example, is less responsive to medication than B-cell lymphoma. Luckily, B-cell lymphoma accounts for 75 percent of canine lymphoma.

Lymphoma (continued)

Other tests that may be recommended include a bone marrow aspirate , ultrasound of the abdomen, and/or a spleen or liver aspirate. These tests are needed to stage the disease, which basically means determining how widespread the cancer is in the body. Lymphoma is classified by stage:

Stage I: only one lymph node involved
Stage II: several lymph nodes in the same general area involved
Stage III: all peripheral lymph nodes involved
Stage IV: all peripheral lymph nodes plus the spleen, liver, and/or anterior mediastinum in the chest involved
Stage V: bone marrow involvement, regardless of any other areas involved

Staging has less impact on therapy choices than one might think but it is true that patients in Stage V, the most advanced stage, have a poorer prognosis than those in the other stages.

How does Lymphoma Cause Death? Lymphoma is a rapidly growing malignancy that is able to arise and/or travel to anywhere where there is lymph tissue. Of course, there is lymph tissue in virtually every organ in the body. Eventually, the cancer will infiltrate an organ to such an extent that that organ fails (often this is the bone marrow or the liver). The patient loses appetite, vomits or gets diarrhea, weakens and dies. At some point the tumor becomes resistant to therapy and no further remissions can be obtained.

My Dog does not Fit the Above Scenario at all. What are other Forms of Lymphoma? Lymphoma is classified by the anatomic area affected. By far, the most common form in dogs is the multicentric form, which accounts for 84 percent of canine lymphoma. In this form, as in the hypothetical case we opened with, all peripheral lymph nodes are large and firm. There are three other forms of lymphoma:

- Gastrointestinal form (affecting only the GI tract) accounts for 5-7 percent of canine lymphoma
- Mediastinal (chest)
- Extranodal (skin, eye and other miscellaneous areas).

Lymphoma can occur anywhere in the body where there is lymph tissue. At this time, we will concentrate on multicentric lymphoma. Eventually further information on these rarer forms will be added.

Chemotherapy FAQ - The word chemotherapy conjures images of people losing their hair and suffering chronic nausea. It is unfortunate that many pets do not receive chemotherapy based upon these unpleasant images that do not truly represent the current state of treatment response in pets. Chemotherapy simply means therapy using medication (as opposed to using surgery or radiation). Decades of research has gone into patient comfort, minimizing side effects and maximizing response so it is important to keep an open mind. The following are common questions pet owners commonly have regarding chemotherapy for their dog.

The median survival time for most dogs on chemotherapy is approximately one year with 25 percent of dogs surviving two years.

Lymphoma (continued)

My dog is not acting sick in any way. Shouldn't I wait until she at least feels sick before beginning chemotherapy? This might seem like a reasonable approach at first glance but let us assure you that it is not. One of the most important factors in determining the quality of remission (i.e., how fast we get remission and how long it lasts) is whether or not the patient is feeling sick at the time chemotherapy is started. When lymphoma patients are staged (see above under "does my pet need further tests?"), stages are subcategorized as a or b, depending on whether or not the patient is feeling ill or not. For example, a multicentric lymphoma dog who feels well is in stage IIIa compared to one who is vomiting or not eating is in stage IIIb. You will have a much better chance for long-term quality survival if lymphoma is treated while the patient is an a.

Are there other factors that might suggest a better or worse response to treatment? The goal is to achieve remission quickly and for the longest possible time. Factors that contribute to an individual dog's ability to do this include:

- Whether he is feeling sick at the time treatment is started. (Dogs that do not feel ill do best).
- Whether there is hypercalcemia (elevated blood calcium) on the blood panel. (Dogs with hypercalcemia do worse).
- Prior exposure (within the last week or so) to corticosteroid medications. (Steroids make the tumor resistant to chemotherapy - see below).
- Whether the lymphocytes involved are B-cells or T-cells. (T-cell lymphoma is more difficult to treat than B-cell lymphoma.)
- Whether there is intestinal involvement. (Intestinal lymphoma is very bad news for a dog.)
- Having Stage V lymphoma. (Most stages carry similar prognoses but Stage V is extra bad.)
- Indolent forms of lymphoma, small cell lymphoma, and low-grade lymphoma progress very slowly but are more resistant to chemotherapy.

Should we see an oncologist? Lymphoma is a condition that not all veterinarians are comfortable treating. Discuss with your veterinarian whether referral to a specialist would be best for you and your pet.

Will chemotherapy make my dog sick? Probably not. Nausea or infection are possibilities, but most dogs do not experience any such complications or they are readily controlled with medications. While approximately 25% will experience some kind of side effect, only 7% of patients experience side effects serious enough to require hospitalization. Human chemotherapy is generally much more aggressive, largely because survival goals are much longer, and as a result there is a larger side effect situation. In pets, goals are different — a year of remission versus a decade of remission for people — and protocols are less aggressive. The bottom line is that most pets on chemotherapy do not have significant side effect issues but if they do occur, they are usually manageable.

Lymphoma (continued)

Will chemotherapy make my dog lose his hair or go bald? While whiskers are commonly lost, substantial hair loss is not experienced by most dogs or cats on chemotherapy. There are some notable exceptions in those breeds that have synchronous hair follicle activity. Most breeds have hairs in all different stages of the growth-shed cycle at the same time. A few breeds have all hairs in the same stage at the same time. The breeds, including some of their mixed breeds, that have a baldness issue include Old English Sheepdog, poodle, Lhasa Apso, and Shih Tzu.

How will I know when we have achieved remission? A patient in remission is indistinguishable from a completely cancer-free patient. The lymph nodes will go down to normal size and if there were any signs of illness related to the cancer, these should resolve. The chance of achieving remission is pretty good with most protocols: 50-80% depending on the protocol selected. The real differences in protocols concern how long the remission is likely to last. Obviously there are patient factors in play that influence this; see above.

How will I know when we have lost remission? The most obvious sign will be that the lymph node enlargement has returned. This means that the cancer is now resistant to the drugs being used and new drugs must be chosen. (Seeking a second remission after the first remission has been lost is called a rescue.)

How long will my dog have quality life on chemotherapy? This depends on what protocol you choose, and there are many. There are also many factors that influence how an individual will do relative to the average response. Important parameters to note when reviewing a protocol are:

1. the disease-free interval (i.e., how long the patient is free from illness)
2. survival time
3. typical duration of remission
4. expense
5. scheduling.

Commonly employed protocols are CHOP, single agent doxorubicin, doxorubicin and prednisolone, Tanovea® and doxorubicin and prednisolone monotherapy. See the links for more information on each drug and its associated side effects and issues. New protocols and new medications are constantly being developed and specialists have the most up to date information.

Lymphoma (continued)

What is CHOP Therapy? CHOP is an acronym for cyclophosphamide, doxorubicin HCl (hydroxydaunrubicin), vincristine (brand name Oncovin) and prednisolone/prednisone. The prednisolone/prednisone is typically given daily at home as a tablet while weekly injections/oral treatments are done in the hospital. There are several variations of this regimen but this multidrug format is probably the most common protocol employed regardless of the type of lymphoma. For B-cell lymphomas, 80-90 percent can be expected to achieve remission within the first month. The median survival time is 12 months with 25 percent of patients still alive at two years. Whether the protocol can be curtailed after a certain time or if it should be continued indefinitely is a subject of debate. For T-cell lymphoma, approximately 70 percent will achieve remission with a six to eight month median survival time. CHOP protocols involve drugs that have specific handling requirements and are generally performed with an oncology specialist.

What is Tanovea®? Tanovea-CA1 is the brand name of a product called rabacfosadine. It is given as an IV infusion every 3 weeks for up to five treatments. It is one of the newest treatments in use for lymphoma. When it is combined with doxorubicin, 68% of dogs achieved remission with a median duration of 194 days while 16% achieved a partial remission. Tanovea-CA1 can be used alone but seems to work better with other medications. The main side effect of concern is pulmonary fibrosis (lung scarring), which is fatal in 5% of patients. West Highland White terriers are predisposed to pulmonary fibrosis and many experts feel this drug should not be used in this breed and should be used with warnings and extra monitoring in any terrier.

What if there are No Specialists or there are Financial Limitations? If there are no oncology specialists in your area, it may be possible for your regular veterinarian to consult with a specialist to put together an appropriate protocol. There are also services where your veterinarian can not only consult with an oncologist but can also obtain needed medications. If a low income solution is needed, it may be worth considering prednisolone/prednisone monotherapy, which is a fancy term for giving prednisolone/prednisone alone with no other chemotherapy agents.

As chemotherapy goes, prednisolone/prednisone is quite benign and many, if not most, dogs have been on it one time or another for itchy skin. prednisolone/prednisone kills lymphocytes including malignant ones. As with other protocols, remission is frequently obtained within the first month but the remission is likely to be short (one to two months) unless other medications are added in. Furthermore, the use of prednisolone/prednisone makes the tumor resistant to other agents of chemotherapy so that it will be especially difficult to get a second remission after the first remission is lost.

The bottom line is that a remission will likely be possible at a low cost without seeing a specialist, but it will likely be a short one. This option is for patients for whom the other protocols are unavailable.

It should also be mentioned that funded research studies are periodically available. These are clinical trials examining an experimental protocol without cost to the pet owner after it has been determined that a patient is a candidate. See what clinical trials are available.

Melanoma

Malignant Melanoma in Dogs and Cats

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Most people have heard of malignant melanoma and know it is a serious skin cancer. The cells involved are the melanocytes, the skin cells that produce the pigment known as melanin. In humans, malignant melanoma is associated with sun-exposure and sunburn damage and is an important reason to have your skin surface be regularly scanned for pigmented growths. The situation in pets similarly involves serious cancer of the melanocytes and often pigmented growths, but in pets specific body parts are classically involved. While any pigmented growth should be reported to the veterinarian, there are specific areas on the body to be particularly concerned about and sun exposure is not as important.

The melanoma is a tumor of pigmented cells called melanocytes.

Benign Vs. Malignant Melanomas/Haired Skin Melanomas - It turns out that the behavior of a melanoma is highly dependent on the region of the body where it develops. Most areas of skin grow benign versions of the melanoma that are called **melanocytomas.** This means that a pigmented growth found on haired skin in an area that is not considered a danger zone is likely to behave benignly. That said, they do not all behave benignly, it is important to have all tumors analyzed by a pathologist so that a given tumor's behavior can be predicted. What ancillary treatment or testing is recommended (if any) will be determined based on this tissue analysis.

Many melanomas removed from haired skin show cells that look malignant under the microscope but do not behave in a malignant manner. To get a better sense of how a given tumor will behave, the number of cells in the process of division are counted in the sample. This is reflected by a number called the mitotic index of the tumor and is expressed as the number of mitotic figures (cells in the process of dividing) per high power field (microscopic view). Less than 3 mitotic figures per high power field indicates the tumor will mostly likely behave in a benign manner. There is evidence that staining the sample for certain tissue markers (such as Ki-67) can help predict behavior as well.

There is some suspicion that haired skin melanomas developing within 1 cm of a mucosal margin (like the mouth or genital area) behave more malignantly than one would expect based on what is seen under the microscope. Always have growths biopsied after removal and do not be shy about consulting an oncology specialist if there is any question.

Melanoma (continued)

Let us return to the concept of the danger zones. There are several areas that grow particularly invasive melanomas, which are not only locally destructive but spread cancer to the lung, liver, and other areas. The areas where melanoma development is particularly threatening include:

- The mouth, lips, oral cavity
- The toe or foot
- The eye.

Each of these areas produces a somewhat different syndrome and we will review each separately.

Oral Melanoma

Melanoma of the Mouth - The oral melanoma is a highly malignant tumor. It is locally destructive in the mouth plus it readily and quickly spreads to other areas of the body. This means that there are three aspects of the cancer requiring attention: the local destruction in the oral cavity; undetectable tumor cells in the process of spreading; and the cancer that is detectable in distant organs.

Once a melanoma is confirmed by biopsy, a staging process must begin to determine the extent of tumor spread. Chest radiographs are scrutinized for evidence of spread, local lymph nodes are sampled, and the abdomen is screened with an ultrasound exam.

In the mouth, the size of the tumor is extremely important when considering the prognosis. Veterinary medicine has adopted the World Health Organization staging system, where Stage I disease is a tumor less than 2 cm (just less than 1 inch) in diameter; Stage II disease is a tumor 2 – 4 cm in diameter; and Stage III disease consists of tumors 4 cm or larger or any tumor with local lymph node involvement. Stage IV disease includes any tumor with evidence of distant spread. Median survival times for oral melanoma have been reported as:

Oral Melanoma

In memory of Scooter. Photo by Shirley Koehler.

Stage I: approximately 17-18 months (with surgery alone)
Stage II: approximately 6 months (with surgery alone)
Stage III: approximately 3 months (with surgery alone)
Stage IV: approximately 1 month (surgery not applicable)

The goal of additional adjunctive therapy (radiation, chemotherapy, immunotherapy) is to extend this time.

Melanoma (continued)

Local Disease Control
Local disease control refers to control of the disease in the mouth. Ideally most of the tumor can be surgically removed; however, even an extensive resection is not likely to remove the entire tumor with certainty and some kind of adjunctive treatment is prudent. Radiation in the area has extended the time until the tumor regrows in areas where complete margins cannot be obtained (i.e. biopsy shows there is still more tumor left). If margins are clean, immunotherapy (see later) may be all that is recommended.

Distant Disease Control
If there is documentation that the tumor has escaped and colonized another site in the body (i.e. the patient is in Stage IV), more extensive treatment is needed and this usually means chemotherapy. The melanoma is notoriously not responsive to chemotherapy in people, but research and new drug development continues. In one study carboplatin combined with piroxicam increased median survival time from 30 days to 119 days in Stage IV patients.

Microscopic Disease
After no disease is detectable to the eye, we cannot be sure about undetectable disease, which is malignant cells in transit looking for a place to set up shop. Chemotherapy helps reach these cells as does immunotherapy, a newer mode of cancer treatment. Immunotherapy involves generating an immune-response against the tumor cells and attacking them with the body's own natural system. Periodic screening tests/staging are needed to see if the tumor has succeeded in settling in a distant organ and therapy can be ramped up to address this event.

Melanoma in the Digit (Toe) - Developing melanoma in the toe or toenail bed seems to be a particular problem for black dogs. The tumor is particularly destructive to the bone and quite painful, starting usually as a swelling that seems associated with an infected toenail. The toe infection may improve with treatment but the swelling does not resolve and ultimately gets worse. If the tumor has not spread beyond the toe, amputation should theoretically be curative but reality is that median survival time after toe amputation in cases where further tumor is not detectable is approximately one year. It is believed that 30-40 percent of these tumors have already spread at the time of diagnosis so if a longer survival is the goal, further treatment should be explored.

Because this is such an aggressive tumor, staging is important after melanoma is confirmed. This means chest radiographs, lymph node sampling, and ultrasound of the abdominal organs to identify distant spread. As before, local disease, distant disease and microscopic disease must be addressed.

Melanoma (continued)

Melanoma of the Eye - Uveal/Iris Melanoma - Dogs
The pigments of the iris and ciliary body within the eye are especially vulnerable to melanoma development. These tumors are particularly difficult to see until they are fairly large. The clinical situation is different depending on whether the patient is a cat or a dog.

The good news is that this is a benign condition in at least 80 percent of patients. The bad news is that an expanding growth inside the eye, even a benign growth, can cause pain and blindness. If glaucoma (increased eye pressure) has resulted or if there is deep inflammation in the eye, rapid tumor growth, or vision loss, it is probably worth simply removing the eye (enucleation) though smaller growths might be amenable to laser therapy.

Uveal/Iris Melanoma - Cats
The feline situation is different in that 60-70 percent of these tumors are malignant and will spread. Tumors can be large and bulgy as in the dog's eye or they can be more subtle, starting as flat areas of pigment on the iris (colored part of the eye) and later gaining some 3-dimensional growth. The eye will likely need removal to manage the pain from the expanding growth but it is important to do proper staging first (radiographs of the chest, local lymph node sampling, ultrasound of the abdominal organs) to determine the extent of the existing tumor spread.

Iris melanosis, which is a benign condition, can be impossible to distinguish from an early melanoma so often periodic evaluation by a specialist is in order. Iris melanosis refers to the "freckles" and flat dark spots that older cats develop on their irises. These spots are common but should not have any bulging or changing roughness when the iris is viewed from the side.

Epibulbar Melanoma
This form of melanoma is usually benign in either dogs or cats and arises on the outer eye portion where the sclera (white part) meets the cornea (clear part over the iris). Smaller growths may not need treatment. Larger ones can be surgically removed, treated with laser or with cryosurgery. Tumor spread is not expected with this form of melanoma.

Treatment - As mentioned, treatment is divided into local disease control, distant disease control, and microscopic disease control. Surgery and radiotherapy are the fundamental treatments for local disease whereas chemotherapy is the foundation of distant disease control. Different medications and protocols are being developed all the time. Immunotherapy is a little harder to classify.

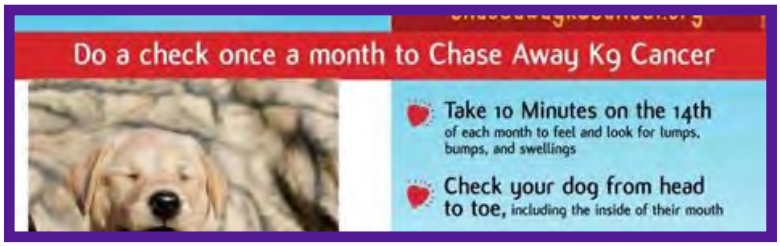
Melanoma (continued)

The Melanoma Vaccine - A melanoma vaccine has been in use for nearly a decade now, not to prevent melanoma development but to generate an active immune response against an existing tumor. The vaccine was tested on dogs with Stage II and Stage III oral melanoma after all detectable tumor was surgically removed with improved survival times achieved over what was expected from surgery alone. The vaccine has also been found helpful for toe/digit melanomas as well.

The vaccine is for dogs without grossly detectable tumor; it will probably not be helpful for dogs where there is already distant tumor spread.

How it Works - An enzyme called tyrosinase is crucial to the melanocyte's ability to produce melanin (pigment). By using human tyrosinase as a stimulator, the patient's immune system can be tricked into attacking the melanoma cells that contain the patient's natural tyrosinase. The vaccine is available only through veterinary oncology specialists. It is given in four single doses at 2-week intervals. Booster shots are given every 6 months and is best used for dogs with oral melanoma without node involvement. Life expectancy has been extended to over one year in many cases.
Learn more information on the new melanoma vaccine and about canine melanoma in general.

Not all veterinarians are comfortable treating malignant melanomas; discuss with your veterinarian whether referral to a specialist would be best for you and your pet.



From Your Editor's Desk

What an exhausting week! Mom went to Montgomery County and left me at home. She made me tired just talking about all the fun things she did and all the beautiful Scotties she saw. Maybe next year she'll take me. I'll be nine years old and could enter the Veterans Class. Just a thought…

This month is pet cancer (awareness) month so Mom and her trustee buddies have found some interesting articles on different cancers that affect my breed. Mom and Dad's first Scottie, Emma MacGregor, died of lymphoma when she was seven. It really broke their hearts to lose her at such a young age.

A lot or research is going on and we hope a lot more is on the horizon now that we have a nice endowment to sponsor such endeavors.

Oh, we had our first snow last night. Dad took me on a log walkie today and made sure to rinse my paws when we got home. If you have to deal with road salt, please rinse your paws, too, or wear booties (I HATE BOOTIES!).

Until next time, I remain your buddy, Ragin

The Scottish Terrier Club of America's Health Trust fund is a 501c3 organization established in 1994 for the purpose of supporting research to benefit all Scotties, investigating and monitoring health issues in the breed using registries, databases and health surveys, and communicating important new health information and research findings to all Scottie owners. All donations made to the HTF are tax deductible to the extent allowed by the law.