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Oncology: It's Not Just for People Anymore

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By Susan I. Finkelstein

Cancer. The Big “C.” The very name invariably conjures fear. According to recent statistics, one of every three Americans will face a diagnosis of cancer. But what many people don’t know is that pets get cancer, too—and in ever-greater numbers. Like people, more companion animals are living longer due to better quality of life, preventive medical care, and vaccinations—and longer life translates into an increased risk of developing cancer. Over 10 percent of dogs and slightly fewer cats develop the disease each year, roughly the same rate as humans. Half of veterinary patients over 10 years of age will get cancer, and about one-quarter will die from it.

Enter the Oncology Service at the Ryan Hospital, dedicated to providing compassionate, efficient, state-of-the-art care to dogs and cats with cancer. Board-certified veterinary and radiation oncologists, residents in training for



certification, and oncology nurses all are part of the Ryan team, which handled an estimated 2,800 patient visits last year. Standard cancer treatments similar to those used in people (chemotherapy, radiation therapy, and surgery) may prolong survival and provide an excellent quality of life in many dogs and cats with cancer. Unlike with people, though, the goal of treating cancer in companion animals is not necessarily eradicating the tumors, but improving the animal’s overall comfort level.

Up Close and Personal

Pat Thatcher, associate director of Penn’s Office of Learning Resources, recently had a very personal experience with the Oncology

Service: Archie the cat, her wise and devoted companion of 10 years, was diagnosed with lymphoma after two months of intermittent severe vomiting and diarrhea. After much discussion with Oncology clinicians, Pat decided to pursue an aggressive course of chemotherapy. Archie and Pat were both put in the “stubborn fighter” category, and **Beth Overley, V’00**, lecturer in oncology, and **Jen Baez, V’92**, assistant professor of oncology, felt that chemotherapy could conservatively extend Archie’s life and increase his quality of life for six to nine months, possibly a year. Nineteen months later—a period that included a remission in which he did not require intravenous chemotherapy—Archie’s previously low-grade heart murmur seemed to worsen, and ultimately heart problems caused his death. He was in a treatment hiatus when he died, and technically still in a form of cancer remission.

“The entire Oncology staff, including all the interns who helped us throughout Archie’s 19-month chemotherapy saga, were wonderful,” recalls Pat. “In addition to excellent veterinary clinical training and practice, they had profound ‘people sense’ and were compassionate and responsive. . . . I have to say that the whole department had an infectious, positive attitude. Archie and I both took on their positive approach, and neither of us second-guessed or regretted our association with Oncology and chemo, even when the going got very tough.”

In February 2003, together with four others, Pat founded the Pets with Cancer Lifeline, a support system for people whose pets are being treated at the Ryan Hospital’s Oncology Service. On its website, <www.dogdoggiedog.com/PetswithCancer.htm>, the grassroots group describes itself as a “network to provide information and support to the families of the newest Oncology patients who have practical questions about pets living with cancer, or simply want to talk with someone whose pet has received a similar diagnosis.” Along with stories and photos of pets who fought cancer—and beat or succumbed to it—are names and email addresses for those wishing to contact one of the cofounders. “We can tell you that our pets have done well in treatment, with excellent quality of life and minimal side effects. We know that Ryan’s Oncology Service provides exceptional treatment. . . . We know they truly care about each and every patient.”

As Archie’s case suggests, some animals may

need more aggressive treatment than the standard chemotherapy, surgery, or traditional radiation allows. Penn’s radiation equipment, now almost 40 years old, is no longer the most effective or humane cancer-treating technology available. As a result, each year the Hospital is forced to turn away or refer hundreds of cancer patients elsewhere due to lack of appropriate



equipment. To ameliorate the situation, the School has launched a fundraising campaign to convert its 8,000-square-foot parking garage into a comprehensive Radiation Therapy and Imaging Facility that will house a linear accelerator (high-energy radiation), an MRI suite, and nuclear scintigraphy (bone scan) equipment—making the School *the* major academic referral center in the eastern United States for diagnostic imaging and treatment of companion animals.

The Research

Healing, though, is only one part of Oncology at Penn Veterinary Medicine; information gleaned from clinical research with veterinary patients provides valuable knowledge that can improve the understanding and treatment of both human and animal cancers. Because many of these trials are funded by grants, pet owners often are not charged or pay just a part of the cost of the animal’s participation.

“Clinical trials involving companion animals are often the stepping stone to clinical trials in humans,” notes Dr. Baez. The Oncology Service currently is involved in many clinical trials, a partial list of which appears below.

Feline cancer cachexia: The goal of this study is to determine the incidence of cachexia (weight loss, wasting of muscle, and general debility) among cats presented to the Oncology Service at the Ryan Hospital and to compare

the incidence of cachexia in the cats with and without tumors that are being treated here.

Canine hemangiosarcoma: Clinicians are examining the efficacy and toxicity of the chemotherapy drug Doxil following surgery on dogs with hemangiosarcoma, an aggressive malignancy of blood vessels and the lining of blood-filled spaces, most commonly the spleen.

Feline mammary tumor: This study evaluates the role that reproductive/hormonal status plays in the incidence of breast cancer in female cats. In human and dog breast cancers, studies show that reproductive/hormonal status is important in the prognosis, prevention, and treatment of disease. In dogs, a study similar showed an increased risk of breast cancer correlated with the age at which a dog was spayed. A more recent study also showed that dogs spayed around the time of diagnosis of mammary cancer enjoyed potentially improved survival rates as well.

Canine melanoma: This study aims to determine if the addition of chemotherapy to the treatment of dogs with early-stage oral melanoma (skin cancer) will improve survival rates. Previous studies have evaluated treatments of the primary tumor but have not addressed treatment and prevention of microscopic secondary tumors. Even with excellent local treatment and no evidence of the spread of cancer at diagnosis, most diagnosed dogs (70–85%) still die from melanoma. (Preliminary results of this study indicated a positive difference in overall survival.)

Magnetic resonance imaging of canine splenic and liver lesions: The effectiveness of MRI of the human spleen has been little studied due to the relative rarity of human splenic lesions. In dogs, however, splenic lesions are relatively common. Unfortunately, ultrasound, the cross-sectional imaging modality most readily available to veterinarians, cannot reliably differentiate benign from malignant splenic and liver lesions. In this prospective study, Oncology staff will perform MRI examinations on dogs with splenic and liver lesions that have been scheduled for surgery or biopsies. They seek to determine the MRI characteristics of these lesions and to correlate MRI findings with pathologic examination of the spleen, to better define the effectiveness of MRI in determining the nature of splenic and/or liver lesions in both dogs and people. This study is funded via grants from the Hospital of the University of Pennsylvania

(Radiology) and Ryan Clinical Research.

Canine lymphoma study: In human medicine, it is well known that lymphoma is not a solitary disease but a variety of disease, each involving cancer of lymph cells. Treatment and outcome are different according to sub-type. It is also known that treatment of lymphoma with chemotherapy can effectively wipe out parts of the immune system for prolonged periods, which can affect a patient's ability to fight off infections and other cancers. This study will better characterize the sub-types of malignant lymph cells by flow cytometry and correlate the results with standard classification schemes and treatment outcome to establish new prognostic markers in this disease. Flow cytometry is also being used to characterize the circulating normal lymph cells to elucidate the role of the patients' immune system in maintaining remission. Thus, results will help us further understand and eventually better treat this important and relatively common canine cancer.

Evaluation of the cancer-prevention effects of non-steroidal drug use in dogs: Results from human studies show that chronic non-steroidal anti-inflammatory drugs (NSAID) may prevent or slow development of various types of cancer. This preliminary study examines the chemopreventive effect of NSAID use in dogs, and early results indicate that NSAID use may be associated with decreased cancer risk in dogs.

Feline large granular lymphoma study: Large granular lymphoma (LGL) is a rare variant of feline lymphoma. This study aims to characterize clinical findings for cats diagnosed with LGL. Results to date show that feline LGL does not respond well to traditional surgical or medical treatment, with survival times of only 45 days. Future studies include evaluation of additional cases, determination of more effective treatments, and molecular characterization of feline LGL cell types.

Treatment for canine malignant histiocytosis: Canine malignant histiocytosis/disseminate histiocytic sarcoma is a rare canine cancer with a grave prognosis. No effective treatment is known. A preliminary study determined that approximately 50 percent of diagnosed dogs respond to the chemotherapeutic agent lomustine. Current studies are under way to evaluate molecular mechanisms of drug resistance in tumors that do not respond to treatment.

These projects vary in scope and size and affect both animals and humans. The ultimate

goal that underlies each study is finding out more about cancer—and ultimately about seeking its cure. In the meantime, while providing care to thousands of pets with cancer, the Ryan Oncology team continues to add to the body of knowledge that enhances our ability to control this disease, evidence once again that physicians and veterinarians are truly practicing “One Medicine” at Penn.

Editor's note: For more information, visit Oncolink, the Internet's first cancer resource, sponsored by Penn's Abramson Cancer Center, at <www.oncolink.upenn.edu>.

Annual SCAVMA Auction

The Student Chapter of the American Veterinary Medical Association (SCAVMA) will be holding its annual auction on Friday, December 3, 2004, in the E. R. Marookian, V.M.D. Auditorium at the Matthew J. Ryan Veterinary Hospital of the University of Pennsylvania.

Come, bid, and go home with new and impressive items, ranging from home decorations to exciting vacations. The event begins with a silent auction at 3:00 p.m., followed by a live auction at 5:00 p.m. SCAVMA will also be selling Penn Veterinary Medicine merchandise while other student clubs will provide food and drinks.

Everyone is invited to support the auction! The SCAVMA auction is a popular event for the entire School community and benefits current students. Proceeds from the silent auction defray the cost of student travel to the annual National Student AVMA Symposium. In addition, the live auction proceeds help fund SCAVMA events and the SCAVMA Scholarship Program, which awards scholarships totaling \$5,000 to students based on their service to the School, academic standing, and financial need.

The mission of SCAVMA is to increase the quality of veterinary student life through educational, social, and cultural extracurricular activities. Please help support this important mission. For more information on the auction or to donate auction items, contact Shannon Omlor, V'07, Auction Co-Chairperson, via email at somlor@vet.upenn.edu.