2017

PetCure Oncology:
Our First 1,000 Patients

PetCure
ONCOLOGY

PURPOSE OF THIS REPORT

In 2017, 12 million cats and dogs will be diagnosed with cancer.[1] Of the estimated 70-80 million dogs and 74-96 million cats in the U.S., cancer accounts for nearly 50 percent of all disease-related pet deaths, and is the number one cause of death in older cats and dogs.

Cancer treatment technology is advancing. Every day, dedicated clinicians and researchers are getting closer to understanding how to combat tumors in the animal population.

This report seeks to raise clinical awareness of technological advances in veterinary radiation therapy and introduce PetCure Oncology's initial dataset of approximately 1,100 patients treated.

[1] National Cancer Institute Center for Cancer Research

Section 1:

2017 Report

OUR FIRST 1,000 PATIENTS

Background

Stereotactic radiation (SRS/SRT) has been used in people since 1950 for intracranial tumors and since the early 2000s for extracranial tumors. A significant body of research has been published over that time. Most of the long-term data is derived from studies in people, where SRS/SRT has often shown results on par with conventionally fractionated protocols with minimal acute side effects.

Making the transition from human therapy to pet therapy is based on well-founded principles of radiobiology. The application of human SRS/SRT standards and protocols within veterinary medicine is expected to generate similar outcomes. Early indications support this theory.

With a national network of veterinary SRS/SRT centers, PetCure Oncology is uniquely positioned and strongly committed to aggregate outcomes data. Our Scientific Advisory Board includes board-certified human and veterinary oncologists as well as experts in medical physics and biology. Their primary function is to continually study our growing pool of data to establish and refine protocols for the delivery of veterinary SRS/SRT, with the goals of improving the quality of cancer care and publishing in the peer-reviewed literature.

Clinical trials

PetCure Oncology is currently recruiting patients for two clinical trials: one evaluating the effectiveness of SRS/SRT on canine lung tumors, and one evaluating a liquid fiducial marker for the creation of a planning target volume in dogs with post-resection soft tissue sarcomas.

Canine patients that have been diagnosed with these types of cancers may be eligible for subsidized SRS/SRT treatment through these clinical trials.[2]

[2] If you are interested in learning more or enrolling a patient, please contact our clinical trials coordinator Brandy Banks (ClinicalTrials@PetCureOncology.com).

OUR FIRST 1,000 PATIENTS

*Treatment population characteristics**

The charts below outline a breakdown of the 1,095 SRS/SRT treatments administered to-date:

By RT Type		
SRS	743	68%
CFRT	207	19%
Palliative	145	13%

By Species		
Canine	929	85%
Feline	160	15%
Other	6	1%

Canine RT Breakdown		
SRS	621	67%
CFRT	180	19%
Palliative	128	14%

Feline RT Breakdown		
SRS	116	73%
CFRT	27	17%
Palliative	17	11%

Canine Histology Data (most common)	
Sarcoma	14%
Carcinoma	9%
Osteosarcoma	8%
Mast Cell Tumor	8%
Presumed Meningioma	8%

Feline Histology Data (most common)	
Lymphoma	23%
Sarcoma	16%
Squamous Cell Carcinoma	14%
Fibrosarcoma	9%
Carcinoma	7%

Canine Localization Data (most common)	
CNS - Brain	16%
Extremity, skin/subQ	15%
Nasal/Paranasal Sinus	13%
Oral Cavity	9%
Appendicular Skeleton	8%

Feline Localization Data (most common)	
Nasal/Paranasal Sinus	28%
CNS - Brain	12%
Truncal, skin/subQ	11%
Oral Cavity	8%
Head/Neck, skin/subQ	7%

Sarcoma RT Breakdown (all pets)		
SRS	118	61%
CFRT	67	35%
Palliative	9	5%

Nasal/Paranasal Sinus RT Breakdown (all pets)		
SRS	202	93%
Palliative	8	4%
CFRT	7	3%

CNS - Brain RT Breakdown (all pets)		
SRS	211	99.5%
CFRT	1	0.5%
Palliative	0	0%

Extremity, Skin/SubQ RT Breakdown (most common)		
CFRT	118	59%
SRS	59	30%
Palliative	22	11%

*Includes data as of 10/12/2017

OUR TEAM

PetCure Radiation Oncology Specialists (PROS)

The PetCure Oncology clinical team is driven by a talented and experienced group of board-certified radiation oncologists. PROS clinicians collaborate with the Scientific Advisory Board on the continual optimization of SRS/SRT protocols, and support patients and veterinarians across PetCure's national network.

Neal Mauldin, DVM
Diplomate, ACVIM
Diplomate, ACVIM (Oncology)
Diplomate, ACVR (Radiation Oncology)
Chief Medical Officer

Tracy LaDue, DVM
Diplomate, ACVIM (Oncology)
Diplomate, ACVR (Radiation Oncology)
PetCure Oncology at SEVO-Med (Jacksonville)

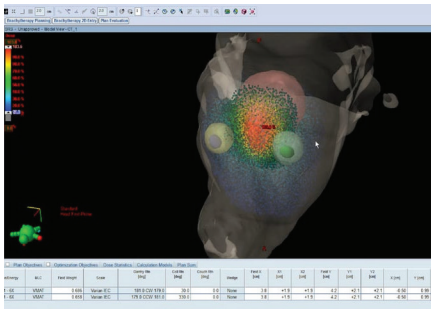
Eric Boshoven, DVM
Diplomate, ACVR (Radiation Oncology)
PetCure Oncology at AVO (Phoenix)

Kelsey Pohlmann, DVM
Diplomate, ACVR (Radiation Oncology)
PetCure Oncology at Care Center (Cincinnati)
PetCure Oncology at Lakeshore (Milwaukee)

Support for your practice

If you are a primary care or specialty veterinarian in search of clinical expertise on a potential cancer case, we encourage you to utilize our clinical team for support. PROS specialists routinely provide remote video analysis based on CT or MRI imaging to aid veterinarians in providing the best guidance to their patients.

To engage a board-certified radiation oncologist for support on a case, simply call **844-452-9034**. Our Pet Advocate Team is standing by to facilitate your request.



RADIATION THERAPY

Historically, radiation therapy has typically been delivered with courses of conventionally fractionated radiation therapy (CFRT) intended to damage the DNA of the cancer cells beyond repair so they stop dividing or die. CFRT is most often delivered in 15-21 fractions on a M-F basis. For veterinary RT patients, each one of these fractions of radiation is accompanied by an anesthetic event.

Section 2:

Overview of Radiation Therapy/PetCure Oncology

STEREOTACTIC RADIATION OVERVIEW

Stereotactic radiation, also referred to as stereotactic radiosurgery (SRS), stereotactic radiation therapy (SRT), or stereotactic body radiation therapy (SBRT) among other names, is nonsurgical and noninvasive. High doses of radiation are delivered to tumors with submillimeter precision, allowing for increased effectiveness and treatment efficiency (up to 800 MU/min). SRS/SRT is a proven cancer treatment for people, but it is a relatively new option for the treatment of pets. Veterinary curriculae typically do not provide much information on CFRT, let alone SRS/SRT. [3]

The unprecedented precision of SRS/SRT optimizes impact on the tumor while minimizing collateral damage to nearby healthy tissue, decreasing the duration and intensity of side effects. SRS/SRT treatment can be delivered in just 1-3 sessions, which has the added benefits of decreasing risk while increasing convenience and efficiency. Additionally, anesthetic events are greatly decreased through the limited number of sessions.

Since the dose of radiation to the tumor is high, the radiation oncologist must precisely target its location. Stereotactic radiation relies on advanced image guidance and precise, reproducible patient immobilization technology to deliver radiation.

Through the use of Volumetric Modulated Arc Therapy (VMAT), precise dose differentiation is achieved during delivery. While the gantry rotates, radiation is delivered in a continuous, 360-degree arc as the multi-leaf collimator continuously differentiates the dose. This further spreads out the dose to healthy tissue, eliminates the need to set up and verify each individual treatment field, and significantly increases effectiveness and efficiency. Precision is increased, treatment and anesthetic times are shortened, and the chance for human error is reduced.

Since high doses of radiation are used, the location of the tumor (i.e., not bordering critical or sensitive structures) may impact whether radiation is viable. The increased precision of SRS/SRT improves the likelihood of radiation as a viable option for tumors in more complex anatomic localizations.

SRS/SRT is an alternative treatment to surgery when the latter is deemed difficult, unlikely to achieve clean margins, or declined by the client.

- *SRS/SRT is most often delivered with curative intent*
- *Treatment is nonsurgical and noninvasive*
- ***SRS/SRT is performed in 1 to 3 sessions and has fewer acute side effects relative to traditional radiation therapy***
- *SRS/SRT provides the opportunity to **treat tumors that were once considered untreatable***

[3] Qualitative Research among Veterinary Professionals & Pet Owners Treating vs. Not Treating Their Pet's Cancer, October 2016, Sabena Qualitative Research Services.

WHAT TYPES OF CANCER RESPOND TO SRS/SRT TREATMENTS?

SRS/SRT is a viable treatment option for many tumors, but is not always the recommended course of therapy. It's essential to provide pet owners with all treatment options to guide them through the process of selecting what is best for their pet and their family.

Many types of cancer can be treated with SRS/SRT, including some forms previously considered untreatable based on their sensitive locations within the body. Treatment protocols for SRS/SRT have been developed to address the following cancers in animals:

Head and neck
- *Oral melanoma*
- *Oral and tonsillar squamous cell carcinoma*
- *Fibrosarcoma*
- *Plasmacytoma*
- *Salivary and ceruminous gland adenocarcinoma*
- *Nasal tumor*

Intrathoracic tumors
- *Heart base (chemodectoma) tumor*
- *Thymoma*

Brain tumors
- *Meningioma*
- *Pituitary macro and microdenoma*
- *Glial tumor*
- *Choroid plexus tumor*

Thyroid tumors

Musculoskeletal/ cutaneous tumors
- *Osteosarcoma*
- *Soft-tissue sarcoma*
- *Fibrosarcoma*
- *Infiltrative lipoma*
- *Mast cell tumor*

Spinal tumors
- *Primary spinal cord*
- *Meningeal*
- *Vertebral body*

Pelvic canal tumors
- *Apocrine gland adenocarcinoma of the anal sac*

Liver tumors

Lung tumors

Lymphoma

Urogenital tumors
- *Prostatic tumor*
- *Bladder tumor*

Miscellaneous tumors
- *Mammary tumor*
- *Adrenal tumor (medullary and cortical)*

PETCURE ONCOLOGY REFERRAL PROTOCOL

Case referral

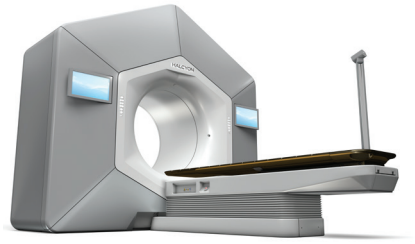
If you have a patient who has been diagnosed with cancer or cancer is strongly suspected and the animal may benefit from treatment, please contact us.[4] Many clinicians will choose to refer case management entirely to PetCure Oncology. Other times, clinicians choose to do initial diagnostics and post-treatment follow-up care at their practice, referring out only for the treatment itself. Most cases fall somewhere in between.

Our partnerships with local specialty hospitals offer board-certified expertise in radiation oncology, in addition to a wide range of specialty services, as part of a comprehensive cancer care approach. For specialists, we provide support as a tertiary care facility, enabling them to provide their clients with additional resources if needed.

SRS/SRT planning and delivery

Varian Medical Systems is the world's leading manufacturer of medical devices and software for treating and managing cancer. Since 2015, PetCure Oncology has been utilizing Varian's equipment that features:

- *Continuous radiation delivery through VMAT in a 360-degree arc as the multi-leaf collimator continuously differentiates the dose*
- *Decrease in treatment/ anesthetic time*
- *Treatments just 5-7 minutes instead of 45-60*
- *Radiation delivered in single arc instead of 5-10 static fields*
- *Rapid onboard imaging to confirm patient positioning quickly and accurately*
- *Rich functionality in products like Eclipse and RapidPlan efficiently create, select, and verify the best treatment plans for their patients*
- *Cone-Beam CT for fine tuning patient set ups with precise CT scans*



In July of 2017, Varian and PetCure Oncology entered into a strategic collaboration that includes the implementation of Varian's software suite, including the RapidPlan™ and ARIA® platforms, across PetCure Oncology's national network of veterinary cancer care centers. In addition, PetCure Oncology is currently in the process of deploying six Varian Halcyon™ treatment systems for use in select sites across the U.S. The deployment of Halcyon, Varian's newest system, reaffirms PetCure Oncology's commitment to providing the highest quality care to pets and access to the latest in radiation therapy technology to veterinarians.

[4] It is important to note that an initial consultation with a radiation oncologist prior to surgery or chemotherapy (or intervention with other treatment options) is critical to achieving the most successful outcome possible. This consult will allow us to determine if treatment is feasible before moving forward. The effects of surgery or chemotherapy may exclude a patient from being an SRS candidate, making it crucial to evaluate all options prior to treatment.

PETCURE ONCOLOGY TREATMENT PROTOCOL

Case referral

Treatment and delivery process

- *A detailed view of the pet's cancer is obtained using CT imaging. The images are converted into a 3-D model. A board-certified radiation oncologist will use this to map the optimal treatment for the pet.*
- *A custom-made immobilizer is created to ensure precise and reproducible positioning during treatment sessions.*
- *A treatment plan is created based on tumor size, shape, and location. The optimal radiation dose is calculated, as is the number of sessions required to deliver it.*

PetCure Oncology's sites all use specialized software for plan review and verification to ensure the best achievable balance between maximum radiation exposure to the tumor and minimal exposure to surrounding healthy tissue.

- *The pet is put under anesthesia, immobilized, and precisely positioned on the table of a linear accelerator. Sophisticated collimator technology is used to shape the radiation beams.*

Treatments are planned by a board-certified radiation oncologist, reviewed by a second board-certified radiation oncologist, and delivered by a licensed radiation therapist based on protocols and standards developed by the PetCure Scientific Advisory Board.

- *All treatments are delivered in 1-3 sessions, depending on the pet's tumor. Pets can return home with their families once they are awake following treatment.*
- *Periodic follow-up visits to monitor the progress of the treatment is recommended. A follow-up appointment should be scheduled two weeks after treatment. Additional follow-up appointments are typically recommended with CT imaging at both 3- and-9-months post-treatment and yearly thereafter.*
- *Upon completion of the treatment, cases are returned to the referring practice for ongoing care. Clients are advised to contact the referring clinician directly with any questions that may come up during the recovery process. Acute post-treatment symptoms are typically minimal and can usually be addressed within the local practice. PetCure Oncology remains available to veterinarians for consultation throughout the entire treatment process and follow-up care regime.*

PETCURE ONCOLOGY

PetCure Oncology cancer care centers are now located in eight cities across the U.S. (Cincinnati, OH, Clifton, NJ, Jacksonville, FL, Milwaukee, WI, Phoenix, AZ, Pittsburgh, PA, San Jose, CA, and Columbia, SC in November of 2017).

Through these centers, PetCure Oncology's goal is to increase accessibility to this technologically advanced treatment for pets and to standardize expert, compassionate care in the delivery of veterinary cancer treatment of all kinds.

To be put in contact with a local practice director or to refer a patient to PetCure Oncology for evaluation, call **1-844-452-9034**.

Click **here** to sign up for our email newsletter to receive updates on the latest case studies.

petcureoncology.com

PetCure Oncology was created in 2014 by the founders of Accelitech®, the largest privately-held network of human SRS centers developed in partnership with hospitals. Our clinical team is headed by an internationally recognized leader in veterinary medical and radiation oncology, Dr. Neal Mauldin, DVM, DACVIM, (Internal Medicine and Oncology), DACVR (RO).

PetCure Oncology's medical standards are driven by a Scientific Advisory Board (SAB). The SAB consists of experts in human and veterinary radiation oncology as well as medical physics and biology. Its charge is to analyze the data to establish standards and protocols for delivering SRS/SRT to pets. PetCure Oncology and the SAB are dedicated to continually improving the standard of care and refining these protocols to optimize outcomes.

PetCure ONCOLOGY