



## Lung Cancer in Dogs and Cats

### Does my pet have lung cancer?

- Compared to people, primary lung cancer is very uncommon in dogs. It is even less common in cats.
- Most primary lung tumors are a type of cancer called carcinoma. There are various types of carcinoma. Some may have a worse prognosis than others.
- Common symptoms include difficulty breathing, exercise intolerance, or non-productive cough.
- However, some dogs only experience weight loss (despite a good appetite) and/or lack of energy. Other dogs have no symptoms at all.
- Diagnosis of lung cancer usually starts with a chest X-ray.
- Your veterinarian may recommend an “FNA and cytology” or a biopsy, to confirm the diagnosis, and determine exactly what kind of lung cancer is present.
- They may also recommend labwork and an abdominal ultrasound to be sure that it is a primary lung tumor, rather than a metastatic cancer that has spread to the lungs from another location in the body. Metastatic lung cancer is usually associated with a worse prognosis, and fewer treatment options than primary lung cancer. It is also much more common than primary lung tumors in pets, so it is important to be as certain as possible about the diagnosis!

### What is the prognosis, and what are the treatment options?

- The prognosis for primary lung cancer varies, and can be very difficult to predict for an individual dog. This section provides some general information about average prognoses.
- The best prognosis is seen in dogs with solitary lesions that are less than 2 inches in diameter.
- The prognosis is best when the tumor is:
  - Small
  - Solitary
  - Has not spread (metastasized) to nearby lymph nodes, or other locations in the lung, or other locations in the body
  - There is no fluid accumulation in the chest
  - The pathologist characterizes a biopsy as being ‘low grade’
  - Symptoms are minimal
- For many dogs, the recommended treatment is surgery.
  - For small, solitary tumors that have not metastasized (spread), the average survival time with surgery alone is 20 months.
  - The average survival is closer to 8 months for dogs with big tumors, and 2 months if there is metastasis.
  - Chemotherapy is largely ineffective.

## **Are there any alternatives to surgery?**

- Most dogs that have lung cancer are elderly, and the surgical approach is quite invasive. While most dogs recover well from the procedure, it is a lot for any patient to go through.
- Stereotactic radiation therapy (SRT, also commonly referred to as SRS, SBRT, radiosurgery and/or Cyberknife-type therapy) is the newest and most convenient treatment available for primary lung cancer. Not all veterinary radiation oncology facilities can provide this type of treatment, and not all facilities that offer SRT have the ability to safely treat lung tumors.
- SRT uses advanced radiation technologies to administer treatment with extreme accuracy and precision. That allows for high radiation doses to be deposited in the tumor, while the nearby important organs (e.g., lung, heart, large blood vessels) receive a much lower dose of radiation than the tumor, intended to protect against and decrease the risk of treatment-associated complications. We even use several techniques to manage and minimize breathing-associated movement of the tumor during treatment.
- Lung tumors are treated in 1-5 treatment sessions. A radiation oncologist can help figure out how many treatment sessions is most appropriate for your pet.
- The treatments are given under general anesthesia, but they are non-invasive, and non-painful. There is no recovery period. Anesthesia is used simply to keep your pet from moving during this high-precision procedure.
- Not all dogs and cats with primary lung cancer are candidates for this treatment, and a CT scan is typically required to determine eligibility.

## **How effective is SRT?**

- We know how to deliver the treatment safely, but there are no published data describing how well SRT works for management of canine and feline primary lung tumors.
- We know that SRT works well, and is an excellent alternative to surgery for a number of different kinds of lung cancer in people.
- We are optimistic that it will also prove effective for pets with lung cancer!

## **How much does it cost?**

- The total cost is different for each patient.
- Treating lung cancer with SRT involves:
  - Consultation with a radiation oncologist (in-person, this is the day of your initial appointment)
  - Tests to help map out the treatment, including a CT (CAT) scan of the chest, and fluoroscopy (typically performed within a day or two of your initial appointment)
  - Treatment planning, performed by the radiation oncologist (takes 2-5 business days, after the CT scan has been acquired)
  - Quality assurance testing, performed by a medical physicist (performed after the plan is completed, usually within 1 day)
  - Anesthesia and treatment delivery (up to 5 days of treatment)
- The total cost is usually between \$6,500 and \$7,000. It may be higher if your radiation oncologist recommends any additional tests. All fees are also subject to periodic review/change by hospital administration.

## Facts about radiation therapy

Performed on an outpatient basis.

- Patients typically arrive at the hospital in the morning. Families are called and come pick their pet up after they have received that day's treatment. This is often in the afternoon.
- If you are coming from a distance, talk with our nursing staff to discuss the logistics of having your pet board at the hospital during radiation therapy. Please note that this type of treatment requires a time commitment of approximately 7-12 business days (note the time required for radiation treatment planning, above) and that treatments will NOT be started on the day of the appointment.

Short-term side effects are usually mild and temporary.

- New radiation technologies and techniques have revolutionized treatment of lung cancers, allowing for a non-invasive approach to treatment of lung cancer, using an approach that has few, if any, short term side effects, and has the promise of being highly effective.

Long-term side effects are possible, but quality of life is usually very good.

- The treatment may cause scarring of lung tissue near the tumor. Rarely, this causes a chronic cough.
- Depending on how close the tumor is to the heart, there is a chance for cardiac arrhythmias. These don't often cause symptoms, but be serious, and require medical treatment (usually oral medications given at home).
- There is a very small risk for rib fractures to form near the tumor, years after treatment. These are usually incidentally diagnosed, and don't cause a problem.
- Depending on the location of the tumor, there is also a chance for permanent haircoat changes, or hair loss on the chest, near the tumor.

## About Us

**Board-Certified Radiation Oncologists:** Veterinarians on faculty at NC State College of Veterinary Medicine who have extensive training in cancer diagnosis/management, and radiation therapy. The radiation oncologists directly oversee all activities relating to your pet's cancer care.

**Radiation Oncology Residents:** Veterinarians who are training to become radiation oncologists.

**Medical Physicists:** Physicists who assure the safe and effective delivery of radiation to patients.

**Radiation Therapists:** Allied health professionals who operate radiation therapy equipment and deliver treatments.

**Nursing Staff:** Licensed veterinary technicians assist the radiation oncologists and therapists in almost aspects of your pets cancer care, and are a vital part of the team.

**Anesthesiology Staff:** Our anesthetists are licensed veterinary technicians who work with board-certified veterinary anesthesiologists to make sure your pet is as safe as possible while anesthetized for radiation therapy.

**Hours:** 7:30am to 4:30pm, Monday through Friday

**Consultations:** Call (919.513.6690) or visit our reception desk to make an appointment.

**Scheduling:** Your radiation oncology team will work with you to develop a plan, but we generally ask that patients are:

- Dropped off between 7:30 and 8:30am  
(except Wednesdays, when it is 7:30am - 8:05am, or 9:15am - 9:45am)
- Picked up by 4:30pm

Radiation Oncology

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