



Chemodectomas (heart-base tumors) in Dogs

What is a heart-base tumor?

Cancers of the heart are uncommon, but when they do happen, most occur at a location called the heart-base. Therefore, we call these “heart-base tumors”.

- There are several types of heart-base tumor, with names like hemangiosarcoma, lymphoma, and chemodectoma (also sometimes called aortic-body tumors, or paragangliomas). Each one can happen in any breed, and at any age, but they tend to happen in middle-aged to older dogs, and:
 - Hemangiosarcoma is most common in larger dogs with relatively long noses, such as Golden Retrievers, Labrador Retrievers, and Doberman Pinschers.
 - Chemodectomas are most common in short-nosed breeds such as Boxers, and Boston Terriers.

How is a chemodectoma diagnosed?

- Most of the time, chemodectomas are found incidentally, meaning they are found before they cause any symptoms. In these cases, the tumor is first suspected based on chest X-rays taken by your veterinarian for a completely different reason.
- When heart-base tumors do cause symptoms, it is because they have grown large, and are pushing on the heart and major blood vessels. Some patients experience weakness, or lack of energy. Other common symptoms include: difficulty breathing, cough, and a big belly (due to ascites, which is a build-up of fluid in the abdomen).
- Most of the time, a presumptive diagnosis is made by a cardiologist based on the location and appearance of the tumor, using an ultrasound of the heart (echocardiogram). In some cases, the diagnosis can be confirmed via biopsy of the tumor (at surgery or with a small biopsy done through the chest wall using a scope).
- Chemodectomas have historically been thought of as being relatively benign (i.e., not very aggressive cancers that typically grow slowly and do not spread), but some of these cancers will spread to other parts of the body (e.g., lungs and lymph nodes) through a process called metastasis. Dogs with metastasis likely have a worse prognosis; therefore, we recommend that all dogs with presumed chemodectoma have chest X-rays and an abdominal ultrasound to make sure there is no evidence of cancer visible elsewhere.

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

The prognosis for cancer affecting the heart varies widely between patients. It can be very difficult to predict for an individual.

For dogs that have small tumors that are causing no symptoms, and no cardiovascular dysfunction, options include:

- Observation: Chemodectomas tend to grow slowly. They may never grow large enough to cause symptoms, and in that situation, your pet may live years without having problems associated with their cancer.
- The most conservative, and likely the safest, approach is to have your pet periodically evaluated by their cardiologist. If the tumor starts to grow quickly, starts to affect how well the heart and blood vessels work, and/or starts to cause symptoms, then consider treatment.

For dogs that have symptoms due to their tumor, or if the tumor is affecting heart function (as seen on an echocardiogram), treatment may improve quality of life and prolong survival.

- Surgery to completely remove the tumor is not usually possible.
- However, a different type of surgery called a “pericardiectomy” is recommended, even if the tumor cannot be completely removed.
 - This procedure does not treat the tumor itself. Chemodectomas cause some patients to experience fluid build-up around the heart, which can be life threatening. Pericardiectomy prevents that build-up from happening, and as a result, helps patients live longer.
- Some oncologists and cardiologists use an oral chemotherapy drug called Palladia (toceranib phosphate).
 - Palladia can be used alone, or in combination with surgery and/ or radiation therapy.
 - There are no scientific data to know how much benefit this treatment option provides to patients with chemodectomas.
 - We don’t know how long a dog needs to take this drug (may be life-long).
 - While most pets tolerate this treatment well, serious side effects can occur. Consult with a medical oncologist before starting Palladia.

Radiation therapy is an excellent option for many dogs. We commonly consider 2 different types.

What about radiation therapy?

SRT: Stereotactic radiation therapy (also commonly referred to as SRS, radiosurgery and/or Cyberknife-type therapy) is the newest and most convenient treatment available for cancers near vital organs such as the heart. It involves precise delivery of very focused radiation beams, to deposit large amounts of radiation in the tumor, with every attempt possible to shield surrounding vital organs (e.g., heart, lungs) from damaging doses of radiation. Usually it is given in 3 treatment sessions, on back-to-back days.

- SRT is not appropriate for all dogs with heart-base tumors. For example, dogs with a lot of fluid build-up in the lungs or surrounding the heart may not be good candidates for this treatment option.
- If you’re interested, be sure to ask your radiation oncologist whether they think SRT could be an option for your pet.

Full-course radiation therapy: Even when SRT isn’t possible, full-course (conventional) radiation therapy usually is! This is given once a day (Monday through Friday) for 4 weeks (20 treatments total).

- Each of these treatments are given under general anesthesia. These radiation therapy procedures are neither invasive, nor painful. Anesthesia is used simply to keep your pet from moving during this high-precision procedure.
- The cost for both procedures is similar. Cost varies between patients, and may be higher if your oncologist recommends any additional tests. Fees are also subject to periodic hospital review and increase. A patient-specific cost estimate will be provided at the time of consultation. Including consultation with a radiation oncologist, a CT scan to plan the treatment, treatment planning and quality assurance testing, anesthesia, and treatment delivery, the total cost is usually between \$6,500 and \$7,500.

How effective is radiation therapy?

Radiation therapy causes most chemodectomas to shrink.

- The tumors often shrink slowly after full-course radiation therapy.
- Tumor size seems to reduce more rapidly with SRT, often shrinking by 50% or more within the first 3-4 months after treatment.

In our experience, the tumor’s growth will be controlled for an average of about 12-18 months, before the tumor starts growing again. At that point, additional radiation therapy could be considered.

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.

- There is a chance for cardiac arrhythmias. These don't often cause symptoms, but can be serious (even life-threatening), and require medical treatment (usually oral medications given at home).
- The treatment may cause scarring of the heart muscle or lung tissue near the tumor. Rarely, this causes a chronic cough, irregular heart rate, or poor heart function.

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 anesthesiologists 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