



## Cardiac Hemangiosarcoma in Dogs

### What is cardiac hemangiosarcoma?

Hemangiosarcoma is a cancer of blood vessels. As the tumor grows, abnormally fragile blood vessels are formed, which have the tendency to break open and bleed. This cancer is common in dogs, but rare in people.

Hemangiosarcoma can develop in many different parts of the body, with common sites including the skin, muscle, spleen, liver and heart. Hemangiosarcoma of the heart most commonly affects parts of the heart known as the right atrium and right auricle.

When the tumor is associated with the heart, blood that spills from these irregular vessels becomes trapped between the heart muscle and the fibrous sac that surrounds the heart (called the pericardium) causing compression of the heart's chambers and subsequently decreased blood flow to the body. This process is known as cardiac tamponade.

Most patients with cardiac hemangiosarcoma are not diagnosed with the disease until they show signs of cardiac tamponade, including fainting, weakness, lethargy, and sometimes decreased appetite and vomiting. Cardiac tamponade is a life-threatening condition, and requires insertion of a needle through the chest wall and into the sac surrounding the heart (known as pericardiocentesis) in order to remove the fluid surrounding and restore normal blood flow to the body.

Aside from its local effects, hemangiosarcoma also typically has a high rate of spread to other parts of the body (known as "metastasis").

### What tests are needed to diagnose cardiac hemangiosarcoma?

Most dogs suspected of having cardiac hemangiosarcoma will need to see a cardiologist to have a sonogram of the heart (echocardiogram) performed. This can often show the doctor a picture of the tumor on the heart. Of course, a biopsy can be considered, and may be recommended since it is the only way to truly confirm the diagnosis (though less common than hemangiosarcoma, other tumor types can be seen on the heart, including chemodectomas, a variety of sarcomas, and mesothelioma), but in many cases this is deemed unnecessary, and the echocardiogram is all that needs to be done for the cardiologist to be comfortable making a certain enough diagnosis to move forward with treatment.

Once cardiac hemangiosarcoma is suspected, it is a good idea to screen the body for spread/metastasis. Bloodwork is often recommended to evaluate overall health. Chest X-rays can help detect spread to the lungs, and a sonogram of the belly (abdominal ultrasound) is recommended to look for hemangiosarcoma in other organs, such as the liver and spleen.

## **What is the prognosis for dogs diagnosed with cardiac hemangiosarcoma?**

Unfortunately, the prognosis for this disease is generally poor. Patients often continually bleed around their hearts, requiring repeated taps to remove the fluid. Patients diagnosed with this disease are often euthanized soon afterwards due to the prospect of a generally poor quality of life. Untreated, most dogs die within days to months of diagnosis. However, aggressive treatment may lead to improvement in quality of life, and longevity.

## **What treatments are available for dogs with cardiac hemangiosarcoma?**

Only a few studies have evaluated treatment of this disease, and the most successful treatment (to date) that we know of involves a relatively invasive surgery to remove the sac around the heart followed by a course of chemotherapy, leading to survival times averaging about 6 months. Such treatment may be beneficial for some patients. But, less invasive treatments to improve the quality of life of dogs affected with cardiac hemangiosarcoma are desperately needed. Some options that we consider include:

### **Radiation Therapy**

- When hemangiosarcoma occurs in other parts of the body, radiation therapy (RT) has been shown to effectively reduce tumor size, and decrease the amount of bleeding. It is therefore reasonable to assume that RT can also be useful for cardiac tumors.
- The heart and lungs are very tolerant of radiation therapy, and the total dose of radiation we use is relatively low, so we expect this treatment to be safe.
- We currently recommend a protocol that involves 2 treatment sessions (on back-to-back days).
- The cost is currently estimated to be between \$2,500-3,000 (including a radiation oncology consultation, CT scan, anesthesia, radiation treatment planning, quality assurance testing, and treatment delivery).

### **Chemotherapy**

- Chemotherapy is often used after surgery for hemangiosarcoma of the liver and spleen. It is also helpful after surgery for cardiac hemangiosarcoma.
- Its primary role is to slow down the spread of cancer to other parts of the body. But combined with RT, it may have also improve local control of the heart tumor.
- The most common chemotherapy drug for hemangiosarcoma is called Doxorubicin (or Adriamycin). This drug can cause side effects in the heart. Therefore, when we combine chemotherapy and radiation therapy (which can also be damaging to the heart), we often chose a different chemotherapy drug instead.
- When combined with RT, we recommend 4 doses (given in the hospital, once every 3 weeks, and administered through an IV) of a chemotherapy drug called carboplatin. The first dose of chemotherapy is given a few hours before the dose of radiation therapy is given. The cost of each chemotherapy treatment is about \$300.

### **Either Radiation Therapy or Chemotherapy, alone**

- The exact risks and benefits of combining chemotherapy and RT are unknown (due to a lack of rigorous scientific studies), but we suspect the combination will be at least as beneficial as surgery and chemotherapy, and has the benefit of avoiding an invasive surgery.
- While we think the combination of radiation therapy and chemotherapy is likely to be more effective than either on their own, it is possible to do one without the other.
- If RT is given by itself, it would still involve only a single treatment session.
- When chemotherapy is given without RT, your medical oncologist may opt to use a drug called doxorubicin, instead of carboplatin. They may also recommend more than 4 treatments.

All of these treatments we offer focus on giving patients a chance to live longer with that improved quality of life. Unfortunately, regardless of how aggressively this disease is treated, a cure is not possible. For some pet owners, it is just not feasible to pursue aggressive medical treatments. In those cases, two options exist:

Conservative Medical Management - Tumor bleeding is often intermittent. Chest taps (pericardiocentesis) can be performed, as needed. Some dogs can maintain a very reasonable quality of life for a few months, by just having periodic taps.

Euthanasia - Cardiac hemangiosarcoma is a challenging disease, and can make dogs feel unwell. Furthermore, aggressive therapy is beyond the financial means of some families. It's tough to make the decision to say goodbye to your pet and family member, but in some cases, this is the most logical choice.

Our hospital's veterinary social worker is a great resource when it comes to making difficult decisions on behalf of your pet. Visit [go.ncsu.edu/vhfamilyservices](http://go.ncsu.edu/vhfamilyservices) for more information.

## 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 pet's 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