Radiation Therapy

Oncology Service

VETERINARY MEDICAL CENTER
UNIVERSITY OF MINNESOTA
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Cancer in Pets

Cancer is the uncontrolled growth of abnormal cells on or in the body. Cancer in pets is a relatively common disease and is the leading cause of death in pet dogs and cats. Not all cancer is the same, but many types are treatable. In some cases, we are able to control the cancer long-term with specialized cancer care. Treatments offered for cancer in humans are becoming increasingly available for pets, including radiation therapy. While radiation therapy is not recommended for every pet, you may wish to learn more about options that may be recommended to treat your pet's cancer.

What is Radiation Therapy?

Radiation therapy uses ionizing radiation to induce DNA damage within cancer cells, which ultimately results in cancer cell death. External beam radiation therapy using a linear accelerator (linac) is the most common type of radiation therapy, in which radiation beams are shaped to the aim at the pet's tumor or surgical scar while avoiding as much normal tissue as possible. Most pets are anesthetized for each treatment and carefully positioned on a treatment couch (table). It is common for pets to need a CT scan to determine the extent of the tumor and to help devise a pet-specific radiation treatment plan. This may be needed even if a CT has been done previously for diagnosis or staging, in order to optimize your pet's radiation plan.

Radiation Therapy Goals

Radiation therapy is typically administered to localized tumors with the primary goal of achieving long-term tumor control while minimizing any radiation injury to normal structures. It is most often used after surgery for an incompletely excised tumor, where there is a reasonable risk of local tumor recurrence, but may be considered prior to surgery in some cases. Radiation therapy administered in this manner is often called definitive-intent radiation therapy (sometimes curative-intent), as it aims to achieve long-term control of tumors. Most veterinary radiation patients undergoing definitive intent radiation are treated over a 3-4 week period, with a small fraction (dose) of radiation administered daily through the week. New technologic advancements have enabled modified protocols in which 1-7 large fractions of radiation are administered instead of many smaller doses; however, this is limited to practices with specialized radiation equipment (stereotactic radiosurgery or stereotactic radiation therapy).

Palliative radiation therapy has a different goal in that it may help relieve pain or improve function for pets with advanced cancer. These protocols can vary and may involve one treatment given weekly or treatments given over several days in a row. The duration of tumor control is much shorter than with definitive intent radiation therapy, however, often helps to improve quality of life. Generally palliative radiation therapy is reserved for patients with advanced disease due to a higher risk of radiation damage to normal tissues when compared to definitive protocols.

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What is My Pet's Quality of Life During Radiation Therapy?

Oncology teams make every effort to ensure that pets are comfortable and happy during treatment with excellent quality of life. With definitive-intent protocols, acute side effects in the irradiated site (such as radiation burn to the skin or mouth) may occur but are managed with supportive care and tend to heal quickly following treatment. The likelihood of acute effects is dependent on the location of the tumor and the radiation protocol. Late radiation effects may also occur, which are permanent, irreversible changes to irradiated tissue that occur months to years following radiation therapy. Most late effects are mild and may include effects such as haircoat color change or permanent loss of hair. It is important to discuss potential side effects with your pet's oncologist or radiation oncologist prior to therapy so that you know what to expect with treatment. Because palliative radiation therapy is administered with a different goal, acute side effects are rare, but the potential for significant late effects is higher; however, as palliative radiation is typically reserved for advanced cancer, late effects are rare.

Pets undergoing radiation therapy are welcome to go home each day, or they can board in the hospital while they receive treatment.

How Long Will my Pet be at the VMC for Radiation Therapy?

As your pet will be anesthetized for each radiation treatment, please remember not to feed him or her after midnight the night before. We ask that patients are in the hospital before 7:30 am - 7:45 am each morning, so we can prepare for the day. Your pet will be taken down to radiation oncology for anesthesia, treatment, and recovery. We will typically offer food following anesthesia. For pets going home each day, the technicians will arrange a time for you to pick up.

What Tumors are Commonly Treated with Radiation Therapy?

Many tumors can be treated with radiation therapy; the most common tumor types in dogs and cats include nasal tumors, brain tumors, spinal cord tumors, tumors of the skin (mast cell tumors, soft tissue sarcomas, injection site sarcomas), tumors in the mouth, anal sac tumors, and bone tumors.