

# USING RADIATION THERAPY FOR TREATING CANCER IN DOGS

*John Robertson VMD PhD*

**W**hen your dog is diagnosed with cancer, most people experience a sense of dread and fear. This is pretty natural. We feel the same way if we, or someone close to us, is diagnosed with cancer. However, there are many types of therapy for cancer in animals and people and many tumors are cured or controlled. The three primary ways cancer is treated are surgery, chemotherapy, and radiation therapy. It is common for these types of treatment to be used in combination, to achieve a better level of control of tumor growth. All types of treatment have a single goal – killing cancer cells. Surgery removes cancer cells from the body and deprives them of blood and nutrients. Chemotherapy poisons cancer cells or interferes with the way they process nutrients or divide to make more cancer cells.

Radiation therapy applies intense radiation to cancer

cells, in order to disrupt their structure, primarily by generating free radicals and breaking down cancer cell function. There are a number of different types of radiation therapy, including treatment with radioisotopes (this is



used for cats that have benign thyroid tumors) or the use of a high energy beam from a linear accelerator, cobalt-60 therapy unit, or from therapeutic x-ray machines. The most common radiotherapy units now used to treat cancer in dogs are linear accelerators. These machines generate energetic particles and radiation that penetrate tissues in the body to reach the site of the tumor.

There is very sophisticated computer software used to plan treatment of tumors, essentially allowing the radiation oncologist to focus the radiotherapy energy on the tumor, while minimizing the amount of radiation that hits surrounding normal tissue. Not all tumors can be treated with radiation – some are not sensitive to the killing effects. Not all sites of tumor growth can be treated; there may be vital structures too close to the tumor that would be damaged by primary or backscattered radiation.

If your dog has cancer and your veterinarian suggests radiation therapy as part of the treatment, there are some basic facts you will need to know when deciding if this is right for you or your pet.

First, radiation therapy is only available at specialized centers, where the machinery and radiation oncologists are present. There are approximately 65 therapy

---

centers in the US currently. In most cases, your veterinarian will need to refer you to a veterinary oncologist at a center to arrange further evaluation and treatment. You and your dog should be prepared to travel to a center for evaluation.

Second, it is very important that the folks at the radiation therapy center have a complete medical record of your dog's health problems, vaccinations and husbandry. This record should include a history of the tumor, including when it was first seen, how it has grown, and any treatments. It is absolutely essential that a tumor biopsy is done and that the report from the pathologist is sent to the radiation oncologist BEFORE your dog is seen. This will help them to determine if radiation therapy will help your dog.

Third, most treatments are now delivered as "fractions" of a total radiation dose. I think of this as a divided dose prescription – just like taking antibiotics for an infection. Smaller doses of radiation, given frequently (over a few weeks), will kill tumor cells and this treatment plan tends to spare normal tissue from excessive radiation damage. You have to be prepared to have your dog in treatment for one or more weeks and this may require you and

your dog to stay near the radiotherapy center between treatments. Many centers have arrangements with local motels to accommodate owners and patients during therapy.

Fourth, your dog will very likely have to be heavily sedated or anesthetized every time it is treated. This helps maintain the position of the dog in the therapy machine, so most of the radiation hits the tumor. There is some risk associated with anesthetizing your dog, and this will be discussed with you by the therapy team.

Fifth, you may not see dramatic results from the therapy for a long time. Don't expect the tumor to disappear overnight. You will have to anticipate some side effects of treatment, depending on the site of the tumor and the amount of normal tissue in the treatment field. Common acute radiation side effects can include redness of overlying skin, development of ulcers in the mouth (if radiation is applied on the head), dry eyes and mouth, diarrhea (if the abdomen is irradiated), or skin ulcers and changes in pigmentation. Most of these side effects can be managed to minimize discomfort.

Finally, radiation therapy may cost several thousand dollars and there can be no guarantee that the tumor in your dog will

be eliminated or controlled. However, radiation oncologists have a lot of experience and they will be able to give you a good idea of rates of success and problems to expect.

In summary, radiation therapy is an effective means of treating some types of cancer. It has the advantages of treating deep tumors and minimizing disfigurement. Disadvantages include accessibility to treatment, the need for multiple anesthesia procedures for delivery of fractionated therapy, and cost of treatment.

The Westie Foundation News, the official publication of the Westie Foundation of America (WFA), is mailed quarterly to all contributors. The WFA newsletter is printed by Art Communication Systems in Harrisburg, PA. The opinions expressed in the articles herein are those of the authors and not necessarily of the editor or the Officers or Directors of the Westie Foundation. The editor reserves the right to edit all materials submitted for publication. The editor welcomes comments, suggestions, and expressions of opinions from the readership. No portion of the WFA newsletter may be printed without the written permission of the editor.

