Cancer Treatment Options

Clinical Oncology Service
Ryan Veterinary Hospital of the University of Pennsylvania

A variety of cancer treatment options exist, and treatment recommendations vary depending upon the tumor type and tumor stage. The mainstays of therapy are surgery, radiation therapy, and chemotherapy. Many tumor types require a combination of treatment methods for optimal tumor control.

General treatment principles: Many low-grade solid tumors that are locally invasive but unlikely to metastasize (spread) can be effectively treated with surgery and/or radiation therapy. Prognosis for these patients can be excellent if the primary tumor is completely removed before spread occurs. Some tumors behave more aggressively, and spread early in the course of tumor growth. These patients may need a combination of surgery and/or radiation therapy to eliminate the primary tumor, followed by chemotherapy to treat/control metastatic disease. In some instances, radiation and/or chemotherapy can be used prior to surgery (*neoadjuvant therapy*) to shrink a tumor and make the animal a better candidate for definitive surgical therapy/tumor removal. Patients with metastatic solid tumors often cannot be cured, but may be palliated (decrease the symptoms and improved quality of life) with the appropriate use of chemotherapy +/- radiation therapy. Systemic cancers such as lymphomas and leukemias are typically treated with systemic therapy, i.e. chemotherapy alone. Chemotherapy can be very effective in these patients and induce complete remission. However, despite the initial good response rates, most of these patients also relapse and develop drug resistant progressive cancer.

Surgery

Surgery has two main functions in cancer therapy. An initial surgical biopsy is often required in order to make an accurate diagnosis. Following biopsy, complete surgical removal of a tumor is the treatment of choice for most primary tumors. In veterinary medicine the biopsy and the excision of the tumor are often performed in one procedure. For localized tumors, surgery is the treatment method that is most likely to result in a cure. Surgery can also be used in combination with other therapies for tumor types that are not effectively treated by surgery alone.

Radiation Therapy

Radiation therapy is a localized treatment, whereby high energy radiation is directed at a tumor site. Radiation therapy can be used alone, or in combination with surgery and/or chemotherapy. It is often indicated when complete tumor removal is unachievable with surgery (due to physical limitations or risk of complications), and can represent an alternative to radical surgery in certain tumor locations, such as the head and limbs where maintaining function and acceptable cosmesis may be more important. Radiation is also often recommended after surgery if the pathology report reveals that the surgical margins are incomplete. Radiation can also provide relief of pain and other clinical symptoms (palliative radiation therapy), such as bleeding, in cases where more aggressive or definitive treatment is not an option.

Chemotherapy

Chemotherapy is the treatment of choice for patients with systemic cancers, such as leukemia or lymphoma, or cancers with a high chance of spread (high-grade tumors). It can be used alone, or in combination with surgery and/or radiation therapy. The goal of chemotherapy is to prolong survival while preserving quality of life. Veterinary medicine uses the same chemotherapy drugs used in human oncology. Veterinary oncologists typically use lower dosages and less frequent administration than human oncologists to minimize the occurrence of serious side effects and the need for hospitalization. Because of the risk of side effects, we often send patients home with medication to prevent nausea, vomiting, diarrhea or infections and owners are informed about what signs to watch for and when to be concerned. Dose reductions and treatment delays are usually instituted in patients that have experienced serious side effects so that they can complete their treatment protocol without compromising their quality of life.