10 COMMON QUESTIONS FROM ONCOLOGY CLIENTS

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The rapid pace of change in knowledge of the scientific basis and clinical practice of oncology presents a daunting challenge to oncologists. The extraordinary increase in the understanding of the molecular basis of cellular processes, the rise in technology, and the steady refinement of the many treatment approaches have influenced every phase of care of patients with cancer.

Our daily interaction with pet owners often raises very basic questions about their pet's illness or treatment regimen. The greatest barrier we have in clinical oncology, is not necessarily lack of funds or specialized equipment to offer care for a pet with cancer, but instead, it is the preconceived negative notions about the disease and its treatment.

This talk will address some of the most common questions (and their answers) posed by clients of pet's with cancer.

1. What caused my pet's cancer?

This is one of the most commonly asked questions by clients of pets diagnosed with cancer. This question is difficult to answer for all cases, but the etiology of cancer most often involves genetics and environmental factors. There is little doubt that cancer occurs commonly in certain breeds and in those cases, genetics plays a major role. Gene mutations that can cause cancer may occur in the germline, giving rise to a heritable predisposition to neoplasia. Most cancers, however, arise from mutations to genes that occur during one's lifetime. These somatic mutations may result from internal factors (such as hormones) or external factors such as tobacco smoke, chemicals, or sunlight. In people, one-third of all tumors are related to environmental and life-style factors. In veterinary oncology, we have recognized nutrition, hormones, viruses and carcinogens such as smoke, pesticides, UV light, asbestos, and canned cat foods to be factors that might increase the risk of cancer in pets. Clients should be educated that increased risk may not necessarily be equal to "cause and effect".

2. Will the biopsy (or aspirate) cause the cancer to spread?

There is little evidence that a *properly* performed biopsy results in widespread dissemination of the primary tumor or negatively impacts patient survival. It is well-known that tumor cells may disseminate during surgical procedures but implantation is highly inefficient and most circulating tumor cells are rapidly destroyed. Performing a biopsy without serious consideration of future treatments, however, may cause significant changes in the optimal treatment plan for the patient. The biopsy site should be positioned in an area that can easily be included in the definitive resection or radiation field. As a general rule, all biopsy incisions on extremities should be longitudinal along the axis of the limb. The biopsy procedure should never disrupt tissue planes. A biopsy which opens new and previously uninvolved tissue planes generally necessitates a wider surgical resection or radiation field to control local disease. Drain placement should be avoided since it allows fluid that has been contaminated with neoplastic cells to contact all

tissues through which the drain was placed. Similarly, formation of seromas or fluid pockets may allow tumor cells to invade previously uninvolved tissue planes.

There are a few circumstances during which a pretreatment biopsy is not necessarily indicated. When the biopsy procedure is associated with a high morbidity (i.e. CNS or spinal cord biopsies) or is as complicated as the definitive surgery, pretreatment biopsies are often not done. When knowing the tumor type would not change the choice of therapy, a pretreatment biopsy is not performed. For example, splenic masses or solitary lung tumors require surgical removal, often regardless of pathologic diagnosis. Also, for mammary tumors in dogs, the simplest procedure that obtains tumor-free margins is acceptable. The surgical procedure is not altered by the tumor histology and the patient's prognosis is not affected by the extent of the resection. Finally, bladder tumors and prostatic tumors should not be aspirated or biopsied via percutaneous techniques due to possible seeding along the needle tract.

3. Will my pet experience nausea and vomiting during chemotherapy?

The potential beneficial effect chemotherapy drugs have against the cancer generally outweigh the possible side effects. In general, fewer than I in 4 animals have adverse effects to chemotherapy, and only 5% have serious events that require hospitalization. With appropriate management, the risk of treatment-associated fatality is less than 1 in 100. Should a serious side effect occur, the dose of chemotherapy can be reduced or additional medications can be dispensed to minimize the likelihood of further events. Gastrointestinal disturbances such as loss of appetite and vomiting are among the more commonly encountered chemotherapy-related side effects. Most often gastroenteritis is mild and self-limiting and pets can be managed at home. Animals that have refractory or severe signs need to be hospitalized to address fluid and electrolyte disturbances and receive antiemetics. Novel antiemetics specifically for use in dogs are about to become available and hopefully will allow us to further prevent and treat chemotherapy-related nausea and vomiting.

4. Will my pet develop an infection during chemotherapy?

Bone marrow cells are rapidly dividing and are sensitive to cytotoxic chemotherapy drugs. Most animals will be completely normal despite low white blood cell and platelet counts and no therapy will be needed. If counts are very low, oral antibiotics may be dispensed as "prophylaxis" to prevent an infection. Hospitalization for diagnostic tests and to administer injectable antibiotics and other supportive measures is recommended if a fever or other signs of illness are present during and episode of bone marrow suppression.

5. Will my pet lose all of his or her fur during chemotherapy?

Hair loss is one of the most well-known side effects in people undergoing chemotherapy and it can be emotionally devastating. Pets rarely lose their fur, but if they do, they are not bothered by it. In most dogs, fur does not grow continually throughout their lives like it does in people. Therefore, loss of fur in pets is uncommon. Exceptions are certain breeds of dogs, such as poodles, Old English sheepdogs and other breeds who have constantly growing hair cycles and need to visit a groomer periodically to be clipped. Those patients may lose a substantial amount of fur. In any dog or cat, any area that is clipped may not re-grow during a course of chemotherapy. Cats (and some dogs) may lose all or most of their whiskers. Any fur or whiskers that regrow after chemotherapy might be a different color or texture.

6. Can my pet receive vaccinations during a course of chemotherapy?
Immunosuppression may result from the cancer itself, but this is controversial. Chemotherapy induces bone marrow suppression, but the resultant "myelosuppression" should not be confused with "immunosuppression". During chemotherapy, sufficient humoral immunity to maintain vaccinal titers and perhaps even respond to natural exposure to viruses in dogs still exists. The lack of change in canine viral titers during chemotherapy cannot be extrapolated to cats; viruses are species specific and viral titer response has varied with different viruses when examined in people. Despite information that dogs are still able to mount effective response to vaccines during chemotherapy, many oncologists choose to avoid boosters. Perhaps it is a fear of inciting a "stressful" situation, or stimulating the immune system when treating a hematopoietic neoplasm but since established immunity from previous vaccinations is not significantly comprised during chemotherapy, this is not unreasonable. Importantly, most regulatory agency use "vaccine status" to base control measures, not viral titers. If vaccines are withheld, this needs to be considered.

7. Can my pet be around family members or other animals while undergoing treatment?
During a course of chemotherapy, it is safe for pets to be around all family members. Enjoying normal activities together, hugging, kissing, or sharing food (eg. cats) are all safe activities. There may be some precautions to consider. Stressful events flood the body with stress hormones that can be harmful to the immune system so at times, it may be best to avoid unfamiliar situations or environments such as dog parks and groomers. If chemotherapy drugs are taken home, they must be stored in a safe place away from children and pets. Chemotherapy pill and capsules should never be touched with bare hands; latex gloves should be worn and hands should be washed after gloves are removed. It is normal for drug metabolites to end up in the urine or feces for up to 72 hours after an animal has been treated. It is a good idea to walk dogs away from public areas for at least 3 days after they have been treated. Gloves should be worn when handling an animal's droppings or cat litter. Cat litter and eliminations that may occur in the house can be flushed down the toilet. Hands should be washed thoroughly after any handling. If a family member is pregnant, breast feeding, trying to conceive, or is immunocompromised, special considerations for interacting with a pet undergoing treatment may have to be considered.

8. Can I use complementary or alternative therapies while my pet is undergoing treatment?
Complementary and alternative therapies such as nutritional supplements, vitamins and herbs are often used by clients in order to improve general well-being and immune function. These therapies, however, can have negative interactions with traditional anticancer drugs. They may alter enzymes or bind to drug transporter proteins potentially interfering with the pharmacokinetics of a chemotherapy agent and result in increased or decreased drug levels. Despite this, 76% of owners of pets undergoing cancer therapy report using complementary or alternative therapies. When asked if they talked to their pet's oncologist about their use, 57% of respondents said "no". Homeopathic (minute dilutions of natural substances), acupuncture, and massage therapy are unlikely to harm patients or cause negative interactions. However, further investigation is needed. Above all, open communication with your pet's oncologist is needed to

best understand the possible complex interactions, benefits and harmful outcomes if alternative therapies are combined with chemotherapy.

9. Will my pet with cancer be cured?

There is no absolute definition of "cure". Some consider 2 years and others consider 5 years as the point to call the disease cured. In people, the 5-year survival rate for all cancers is 66%. Cure is the goal of every veterinary oncologist, but unfortunately, the true long-term survival rate is unknown for most tumors. For the more common tumors encountered in dogs and cats, long-term survival rate may only be 20-40%. Most cures are accomplished when an effective surgery is the option for the tumor. Chemotherapy and radiation therapy are important for control of many tumors in animals, but to a lesser extent. Despite the lack of long-term control for many cases, the majority of our clients would agree the quality and length of life afforded by the cancer care given to their pet was a "success".

10. What if I do nothing?

Every client has their own goal for quality and length of life as well as limits for the possibility of side effects and cost of care. Choosing "no cancer therapy" is always an option and rarely is unreasonable. However, palliative and supportive therapies may still successfully improve quality of life without necessarily increasing length of life. Palliative therapy may include such measures as providing analgesics, antiemetics, or appetite stimulants. Although it can be awkward, difficult, and emotional, euthanasia may be recommended to alleviate pain or other unwanted aspects of care of the cancer. When the best interests of the pet are given first priority, euthanasia does not need to be an end in itself, but rather a means to ending suffering.