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## **Malignant Lymphomas (lymphosarcoma)**

The “typical” canine lymphoma patient is a middle-aged dog brought to LePar because one or more lumps have been found. Your veterinarian rapidly determines that all of the peripheral lymph nodes (those near the skin surface) are enlarged and firm. Usually the dog has not been showing any signs of illness. The next step is a blood panel and urinalysis to more completely assess the patient’s health and one or more lymph nodes are aspirated or biopsied to confirm the diagnosis of lymphoma.

So here we are. We have confirmed lymphoma and we know the average life expectancy for a patient with untreated lymphoma is about 2 months from the time of diagnosis. If this is your dog you probably need some time to absorb the impact of the cancer diagnosis. You have many general questions and you know that a decision regarding chemotherapy must be rendered.

We will attempt to cover commonly asked questions owners have at this point.

### **How Did My Dog Get Lymphoma?**

We do not know how dogs (or people for that matter) get cancer most of the time. There are many types of cancer and many possible causes of cancer (chemicals in our environment, sun exposure, assorted viruses and infections). There are important genetic factors as well. Cancer starts with one or a small group of cells that have “gone wrong.” It appears that such cells arise in our bodies all the time and we have an assortment of natural mechanisms to destroy these cells before they get out of hand. Sometimes these cancer cells escape our natural mechanisms and cancer develops. It is important to realize that cancer is not contagious and that, as a pet owner, you should not feel that you caused this or brought it on your pet somehow.

Many people feel a need to find blame and latch onto the idea that a household cleaner or pesticide was the cause. This is a natural part of grieving but it is important not to focus on cause unduly. Cause is not relevant to treatment; further, there is no way to verify cause. It is best to concentrate on treatment. At this time, there is no way to know what caused lymphoma development in a given patient.

### **Can My Dog Be Cured?**

Theoretically, yes, but practically speaking no. It is best to focus on a realistic outcome which is the longest possible survival with good quality life. Different treatment protocols are associated with different disease-free intervals.

## Does My Pet Need Further Tests?

If a biopsy has not been performed, it is a good idea to have one done so as to gain the maximum information about the tumor (whether it is slow or fast growing, what type of lymphocytes are involved etc.) as this information can help predict the response to chemotherapy. We can also run a PCR off the initial cytology that was used to diagnose the condition which can further differentiate the lymphoma between B and T cell lymphoma which also affects prognosis. In cats, due to the effects of the feline leukemia virus on the bone marrow, a biopsy is absolutely necessary to diagnose lymphoma as there are many other blood diseases that can mimic lymphoma. In the dog, however, a lymph node aspirate is frequently adequate to make the lymphoma diagnosis. Many oncologists will require a biopsy prior to referral.

Other tests that may be recommended include a bone marrow aspirate and/or a spleen or liver aspirate. These tests are needed to stage the disease. Lymphoma is classified by stage:

**Stage I:** - only one lymph node involved, **Stage II:** - several lymph nodes in the same general area involved, **Stage III:** - all peripheral lymph nodes involved, **Stage IV:** - all peripheral lymph nodes plus the spleen, liver, and/or anterior mediastinum in the chest involved, **Stage V:** - everything in stage IV plus bone marrow involvement

In cases of lymphoma that are not as straightforward as the classical multicentric lymphoma described above, staging may be more important. Staging used to be done regularly after the initial diagnosis of lymphoma but it has since been found that stage of disease does not impact upon the response to chemotherapy (i.e. it is not true that a stage II will have a better response than a stage IV). The exception is Stage V, the most advanced stage. Patients with stage V lymphoma tend to have a poor response to chemotherapy. Further staging involves bone marrow aspirate/abdominal ultrasound with aspiration.

## How Does Lymphoma Cause Death?

Lymphoma is a rapidly growing malignancy that is able to go and grow anywhere where there is lymph tissue. This is virtually every organ in the body. Eventually, the cancer will infiltrate an organ to such an extent that that organ fails (often this is the bone marrow or the liver). The patient loses his/her appetite, vomits or gets diarrhea, weakens and dies. At some point the tumor becomes resistant to therapy and no further remissions can be obtained.

## My Dog Does Not Fit the Above Scenario at All. What Are Other Forms of Lymphoma?

Lymphoma is classified by anatomic area affected. By far, the most common form in the dog is the multicentric form as described above. There are other forms:

- Skin form (also called mycosis fungoides)
- Gastrointestinal form (affecting only the GI tract)
- Leukemia (bone marrow form)

Lymphoma can occur anywhere in the body where there is lymph tissue. At this time, I will concentrate on multicentric lymphoma.

## Chemotherapy

The word chemotherapy conjures images of the bald Elizabeth Perkins from *The Doctor* or the bald and vomiting Campbell Scott in *Dying Young*. It is unfortunate that many pets (and

probably people, too) do not receive chemotherapy based upon these unpleasant images that do not truly represent the current state of treatment response. Chemotherapy simply means therapy using medication, as opposed to therapy using surgery or radiation. We hope that you will open your mind to what decades of research and clinical experience tells us about chemotherapy rather than listening to what Hollywood has to say on the subject. The following are common questions pet owners commonly have regarding chemotherapy for their dog. Dogs generally tolerate chemo better than humans.

### **My Dog is Not Acting Sick in Any Way. Shouldn't I Wait Until She at Least Feels Sick Before Beginning Chemotherapy?**

This might seem like a reasonable approach at first glance but let us assure you that it really isn't. One of the most important factors in determining the quality of remission (i.e., how fast we get remission and how long it lasts) is whether or not the patient is feeling sick at the time chemotherapy is started. When lymphoma patients are staged (see above under "does my pet need further tests"), stages are subcategorized as "a" or "b" (for example, a multicentric lymphoma dog who feels well is in stage IIIa while a multicentric lymphoma dog who is vomiting or not eating is in stage IIIb). You will have a much better chance for long term quality survival if lymphoma is treated while the patient is an "a."

### **Should We See an Oncologist?**

It is never wrong to see a specialist. Lymphoma is such a common malignancy in humans that there are always new drugs, new protocols and experimental therapy that your regular veterinarian may not be familiar with. Seeing a specialist may be the best way to present you with all of your options. If you are interested, ask your veterinarian for a referral.

### **Will Chemotherapy Make My Dog Sick?**

Probably not. Nausea or infection are possibilities but most dogs do not experience any such complications. Only 7% of patients require hospitalization due to side effects of chemotherapy. The bottom line here is to know that animals rarely get sick from chemotherapy but that you should know what to do in case of a problem (see later).

### **Will Chemotherapy Make My Dog Lose His/Her Hair or Go Bald?**

While whiskers are commonly lost, substantial hair loss is not experienced by animals on chemotherapy for cancer. There are some notable exceptions: breeds that have synchronous hair follicle activity. Most breeds have hairs in all different stages of the growth-shed cycle at the same time. A few breeds have all hairs in the same stage of growth-shed at the same time. The breeds that can have a baldness issue include: the Olde English Sheepdog, the poodle, the lhasa apso, the shih tzu.

### **How Will I Know When We Have Achieved Remission?**

A patient in remission is indistinguishable from a completely cancer-free patient. The lymph nodes will go down to normal size and if there were any signs of illness related to the cancer, these should resolve. There is approximately a 75% chance of achieving remission regardless of protocol selected.

### **How Will I Know When We Have Lost Remission?**

The most obvious sign will be that the lymph node enlargement has returned. This means that the cancer is now resistant to the drugs being used and new drugs must be chosen. (This is called a rescue.)

## **How Long Will My Dog Have Quality Life on Chemotherapy?**

This depends on what protocol you choose and there are many. There are also many factors that influence how an individual will do relative to the "average" response. Important parameters to note when reviewing a protocol are:

- 1) The disease-free interval (i.e. how long the patient is free from illness)
- 2) Survival time
- 3) Typical duration of remission
- 4) Expense
- 5) Scheduling