

## WHAT IS LYMPHOMA?

Canine lymphoma is the most common malignancy affecting our dogs, and can take many different forms:

- The most common is generalized lymphoma, which causes swelling of the lymph nodes that can be felt and seen through the skin (80% of patients)
- cutaneous lymphoma, which creates oozing skin sores, and
- Internal lymphoma which can cause difficulty breathing, vomiting, or diarrhea.

While lymphoma can affect any type of dog, large breeds such as Boxers, Retrievers, and Shepherds are most commonly affected.

## HOW IS LYMPHOMA IN DOGS DIAGNOSED?

Lymphoma is typically diagnosed in one of two ways:

- The presence of multiple swollen lymph nodes, one of which is then aspirated for a biopsy sample
- The presence of abnormal cells or cell counts on a blood test.

## ARE ALL TYPES OF LYMPHOMA IN DOGS CREATED EQUAL?

There are two basic types of lymphoma, B cell and T cell. About 2/3 of lymphoma cases are of the B cell type, which carries a better prognosis than does T cell lymphoma. The only way to distinguish between B and T cell types is with specialized testing called flow cytometry or immunohistochemistry (IHC).

If you want to know as much as you can about your pet's prognosis with lymphoma and how best to treat them, we need to know whether we are dealing with a B or T cell lymphoma. Typical cost for these tests is about \$400.

## THE FIVE TREATMENT STRATEGIES FOR LYMPHOMA IN DOGS

**1) TRADITIONAL CHEMOTHERAPY**, where a rotation of four drugs is used to kill any rapidly-dividing cell in the body... including the lymphoma cells.

- This protocol is called the CHOP protocol (an acronym of the ingredients) or the modified Wisconsin protocol, since it was developed at the University of Wisconsin.
- This treatment gives us the best odds of getting your dog into remission for a variable period of time, with **80-90% of pets achieving clinical remission. A remission is NOT a cure**, but rather represents the temporary disappearance of clinically detectable cancer.

- It consists of a multi-agent protocol incorporating several injectable and oral drugs (L-asparaginase, vincristine, Cytoxan, prednisone, and doxorubicin), given on a more-or-less weekly basis for a period of several months. Each drug works to kill the lymphoma cells in a different way, and the drugs are alternated to prevent or delay the onset of lymphoma cell resistance and reduce the incidence of side effects.
- One downside to the use of such a protocol is the usual need for 12-16 visits to a veterinary cancer specialist for treatments.
- The other, as mentioned above, is the incidence of side effects due to the broad spectrum of cell kill. The most common side effects are vomiting, diarrhea, lethargy, and bone marrow suppression.
- Recheck examinations and blood work are performed regularly during treatment to ensure that dogs are tolerating and responding to their protocol well, and that it is safe to proceed with subsequent treatments.

#### WHAT SHOULD I EXPECT WITH THE CHOP PROTOCOL FOR MY DOG WITH LYMPHOMA?

- 80-90% of dogs treated with the CHOP protocol will go into remission for variable lengths of time.
- Remission is NOT a cure, but a temporary disappearance of symptoms.
- Relatively few dogs are truly cured of their lymphoma with treatment.
- The majority relapse at some point, at which time they may be treated with a different chemotherapy protocol.
- In general, the duration of these second and other subsequent remissions tend to be shorter than the first remission.
- ***The average survival for canine lymphoma patients with generalized lymphoma who are treated with chemotherapy is approximately one year.***

#### ARE THERE OTHER CHEMOTHERAPY PROTOCOLS FOR LYMPHOMA?

A recent study (Brodsky, et al) evaluated the combination chemotherapy consisting of L-asparagine, mechlorethamine, vincristine, procarbazine, and prednisone (= L-MOPP) in dogs with T cell lymphoma. This protocol was associated with a complete remission rate of 78%, and overall survival of 270 days post-diagnosis. Interestingly, a subgroup of about 20% were still alive >900 days, which is much longer than commonly observed. This protocol is not cheap, has a high percentage of side effects, and can only be administered by an oncologist.

**2) METRONOMIC THERAPY OF LYMPHOMA IN DOGS** is a new approach that relies on small doses of one to two chemotherapy drugs given orally by owners at home. This approach has been studied extensively in other forms of cancer, and is actively being researched for lymphoma

- The incidence of side effects is generally very low because of the smaller doses used more frequently.

- It is important to know that using metronomic therapy for lymphoma patients is not intended to induce remissions.
- It is best to use metronomic therapy following induction protocols (like CHOP, above) when the patient is in clinical remission. Using continuous low dose cytoxan, chlorambucil, melphalan, procarbazine, and/or dexamethasone may be helpful in sustaining longer remissions or partial remissions.

### 3) NEW THERAPIES FOR LYMPHOMA IN DOGS

A) AUTOLOGOUS CANCER VACCINES: A new approach to fighting cancer with solid tumors (like the enlarged lymph nodes of lymphoma patients) is to surgically remove tumor tissue and use it to actually formulate a vaccine against the tumor cells. ***This is the most natural way to fight cancer, as the resultant vaccine is very specific for the patient's tumor type.***

B) [TANOVEA](#) is a new drug in the veterinary field. Unlike traditional chemotherapy, which targets and attacks ANY dividing cells in the body—hence the side effects of hair loss, nausea, etc—***Tanovea preferentially targets and attacks only the cells causing lymphoma.*** It is effective in 60-80% of cases of lymphoma, and works best with B cell types which have not previously undergone chemotherapy. It is given intravenously, every three weeks...

### 4) PREDNISONE THERAPY FOR LYMPHOMA IN DOGS

Because the lymphocytes that create lymphoma are immune cells, it is logical (and very inexpensive) to target them with immune suppressives like steroids. While initial results may be quite good, the benefits are typically short-lived and the symptoms may quickly recur.

Studies show that dogs who have been treated with steroids don't respond as well to other forms of lymphoma treatment, so you don't want to use prednisone if other therapies for lymphoma are on the table.

However, prednisone can be a good short term option or used in cases where the budget is a little tough.

### 5) INTEGRATIVE THERAPY FOR LYMPHOMA IN DOGS

Listen, there are no good studies supporting the use of integrative therapy to help dogs fight lymphoma. Never have been, never will be... because the funding just isn't there. However, that does not mean that such therapy has no benefit for our dogs in their journey through cancer.

Our bias toward integrative therapy for canine lymphoma includes these facts:

- barring the occasional miracle, there is no medical cure for lymphoma
- there is VERY solid evidence supporting the use of integrative therapy in humans (see below), and
- if we can benefit our dogs in their fight against cancer... in any way... without side effects, then we should.

HERE ARE FIVE NATURAL WAYS TO FIGHT LYMPHOMA-- Each proven in multiple studies that you can find on PubMed.

- Curcumin like our [Longevity Plus](#) -- [Study 1](#), [Study 2](#)
- Vitamin D
- Vitamin C
- CBD
- EGCG, the active ingredient in green tea (always DECAF for dogs) [Study 1](#)

***If you believe in doing everything you can for your pet with lymphoma, we can help you!!***