



Lymphoma in Dogs

What are lymphocytes and lymphoblasts?

Lymphocytes are a type of white blood cell that regulate and control the immune response in the body. Lymphocytes are found throughout the body and circulate through the lymph nodes, blood, and lymph vessels. Lymphoblasts are the cells that ultimately develop into lymphocytes and are found primarily in the lymph nodes, spleen, and bone marrow.

What are lymphoma and leukemia?

Lymphoma is a cancer of the lymphocytes or lymphoblasts. While it most typically involves the lymph nodes, it can affect any internal organ. Leukemia is a related condition that develops as the cancer cells enter the bloodstream.

What types of lymphoma afflict dogs?

Lymphoblastic lymphoma is the most common and rapidly progressive form of lymphoma to affect dogs. Lymphocytic lymphoma is a less aggressive disease that is generally less common. Leukemia can also be lymphoblastic or lymphocytic, with the lymphocytic forms being much less aggressive.

Lymphoma is staged with the following classification scheme (a sub-classification is also applied based on whether an animal is healthy (a) or sick (b)):

Stage	Anatomical Involvement
1	Single lymph node
2	Multiple regional lymph nodes
3	Generalized lymph nodes
4	Liver or splenic involvement
5	Bone marrow, blood (leukemia), and/or other organ involvement

What causes lymphoma?

Cancer is caused by a combination of environmental and genetic factors. While certain breeds are predisposed to lymphoma (Golden Retrievers, for example), a specific cause is usually not identified.



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What clinical signs does lymphoma cause?

Many patients with lymphoma have no significant signs of illness other than enlarged lymph nodes. With time, if untreated, lymphoma eventually becomes progressive and starts to cause more significant and highly variable clinical signs.

Clinical signs may include:

- Enlarged lymph nodes
- Vomiting
- Lethargy
- Increased urination and drinking
- Anorexia
- Diarrhea
- Labored breathing
- Weakness

What laboratory changes does lymphoma cause?

Early in the disease, lymphoma often causes no laboratory abnormalities. As the disease progresses various lab changes may develop in the CBC, chemistry and urinalysis. In more advanced or severe disease, leukemia may also develop.

What testing is recommended for lymphoma and leukemia patients?

In evaluating patients with lymphoma, there are many things that need to be considered. Urinalysis, CBC and chemistry are performed to evaluate internal organ function, as well as platelet and red cell changes. Abdominal and thoracic radiographs are recommended to evaluate for internal organ changes that can not be assessed with physical examination. Some patients also require ultrasound examination, bone marrow aspiration, or other more specific testing.

Most patients evaluated for lymphoma will need the following tests:

- Chemistry profile
- Complete Blood Count (CBC)
- Chest radiographs
- Urinalysis
- Abdominal radiographs

What treatment options are available for lymphoma patients?

Chemotherapy is the treatment of choice for lymphoma. Chemotherapy is highly effective in treating this disease and is associated with relatively few side effects. In lieu of chemotherapy, while not recommended, prednisone therapy alone can help to



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improve short term quality of life. It is important to be aware, however, that prednisone therapy prior to chemotherapy may affect response and remission rates. The specific treatment plan will depend on the individual case and we will discuss the treatment options with you at the time of your appointment. Please see our chemotherapy handout for more specific information on these drugs and the side effects that can be seen.

What is the prognosis with lymphoma in dogs?

During treatment with chemotherapy, most pets enjoy an excellent quality of life with relatively few side effects. Seventy to ninety percent of dogs will achieve remission in the first few weeks of starting chemotherapy. Median remission periods are around a year with median survival times near 18 months. About 25% of dogs are still in remission two years after initiation of chemotherapy. The prognosis depends on the history, clinical signs, and type of lymphoma or leukemia present. We will discuss the specifics of your dog's case at the time of your visit.