Lymphosarcoma in Cats

Lymphosarcoma (lymphoma) is one of the most common cancers diagnosed in cats. It is a cancer of the lymphocytes (a type of blood cell) and lymphoid tissues. Lymphoid tissue is normally present in many places in the body including lymph nodes, spleen, liver, gastrointestinal tract and bone marrow.

The feline leukemia virus (FeLV) has been shown to cause lymphosarcoma in cats. We believe that the feline leukemia virus is responsible for many of the cases of lymphosarcoma. Cats with the feline immunodeficiency virus (FIV) are also at higher risk of developing lymphosarcoma. Cats of any age, breed and sex can be affected. We typically see lymphosarcoma in younger cats that are infected with the feline leukemia virus, and in older cats that are not infected with the virus.

Types of Lymphosarcoma

Lymphosarcoma can be divided into several different forms, which depend upon the primary (predominant) site of the tumor. Some cats have multiple sites of involvement and do not fit well into just one category. These are usually animals with very advanced disease.

Gastrointestinal tract

The most common form is involvement of the gastrointestinal tract. This includes the stomach, intestines and liver as well as some of the lymph nodes surrounding the intestines. Cats with this type of lymphosarcoma may have vomiting, diarrhea, weight loss or a decreased appetite.

Mediastinal

The mediastinum is a term used for a special aggregation of lymphoid tissue in the chest. Cats with this type of lymphosarcoma often are seen because of difficulty breathing due to a large mass in the chest or an accumulation of fluid around the lungs.

Renal lymphosarcoma

The kidneys may be the primary sites of involvement. Cats that have this type are often seen because of signs related to kidney failure (increased thirst, increased urination, loss of appetite, vomiting).

Bone marrow

If the cancer were confined to the bone marrow, we would call this leukemia. The signs that we see in cats are usually related to the decreased numbers of normal cells (such as red blood cells that carry oxygen, white blood cells that fight infection and platelets that help with clotting) which are made in the bone marrow. Anemia, infections and bleeding are common problems.

External lymph nodes

In a few cats, the only site of involvement is the external lymph nodes. These cats may be seen because of problems such as vomiting and loss or appetite or because the owner noted "lumps" (enlarged lymph nodes) on their cat.

Other sites

We will occasionally see other sites such as the skin, nose, brain, and spinal cord as the primary site of involvement.
**Diagnosis/Initial Evaluation**

A biopsy (tissue) or cytology sample is required in order to make a diagnosis of lymphosarcoma. In some cases, we can obtain a diagnosis without surgery. However, in some cases, we may need to perform a surgical biopsy to obtain adequate tissue to confirm the diagnosis. The ease with which a diagnosis can be made depends upon where the tumor is located.

A complete evaluation of a cat suspected of having lymphosarcoma includes a search for tumor in other locations (this is what we call staging). A complete blood count (CBC), a serum chemistry profile, urinalysis and FeLV/FIV testing are always performed and provide important information regarding the effects of the cancer on body functions as well as the ability of the patient to handle chemotherapy. An abdominal ultrasound (sonogram) allows us to evaluate the liver, spleen, internal lymph nodes and intestinal tract for possible tumor involvement. Chest x-rays allow us to look for internal lymph nodes, lung involvement, an enlarged mediastinum or fluid around the lungs. A bone marrow aspirate allows us to look for tumor cells in the bone marrow as well as to evaluate the marrow's ability to produce normal blood cells. Once we have these results, we can then decide upon the best treatment for an individual cat.

**Treatment/Prognosis**

Chemotherapy is the mainstay of treatment for lymphosarcoma. There may be some situations when surgery (e.g. to get a biopsy or to remove an intestinal mass) or radiation therapy (e.g. if the cancer is localized to one site) may also be indicated; usually this is in addition to chemotherapy. Specific recommendations will be discussed with you based on your pet's particular situation.

Lymphosarcoma is very responsive to chemotherapy and up 60% of treated cats will go into remission. The definition of remission is the complete disappearance of detectable cancer. However, microscopic amounts of tumor cells can remain hidden in the body. A remission is NOT a cure but it does allow your pet to experience a good quality of life. Because of this, chemotherapy should not be discontinued when a remission is obtained. The length of the remission depends upon many factors including the primary site, how sick an animal is at the start of treatment and the extent of disease. In most situations, the average remission and survival times are between 6-8 months.

The exact drugs and schedule will depend upon how aggressive the cancer is behaving, how sick an animal is at the start of treatment and any abnormalities in organ function (especially important are changes in kidney and liver function). On a typical schedule, your cat will receive weekly treatments for the first 4-6 months. Several different drugs (L-asparaginase, vincristine, Cytoxan, methotrexate) are alternated (or combined in some cases) in order to reduce the chance that tumor cells will become resistant and to reduce the risk of side effects. Some of the drugs are given by injection and some are given orally (this can be done at home). Oral prednisone is also included in the treatment plan. Bloodwork and/or x-rays/ultrasound are generally repeated at regular intervals to look for side effects (such as a low white blood cell count) and to determine if an animal is in remission.

If your cat remains in remission for 4-6 months, the interval between treatments is lengthened to every two weeks. After one year, treatments are given every three weeks for an additional 6 months. If a patient is still in remission at 1 1/2 years, treatment is discontinued. Only 10-15% of cats will ever reach the point where we can consider discontinuing treatment.

If a patient comes out of remission, we can try to put them back into remission using either new combinations of the same drugs or different drugs. Unfortunately, the chances of obtaining a second remission are lower and the risk of side effects may be higher. However, there are some cats that do respond and have additional time with a good quality of life.

Most cats tolerate their chemotherapy well and have minimal side effects. Serious side effects are only seen in 5-10% of the patients treated. If they are serious or intolerable, we can consider either lowering the dose of the offending drug or substituting a different drug. Side effects include nausea, vomiting and loss of appetite, diarrhea, extreme tiredness or infection. Cats do not lose their hair but may lose their whiskers and have a different texture to their fur. Please also see our handout [Chemotherapy in Small Animals](http://www.oncolink.org).