Lymphosarcoma (lymphoma) is the third most common cancer diagnosed in dogs. It is a cancer of 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 average dog with lymphosarcoma is between 6-9 years although dogs of any age can be affected. Certain breeds (Boxer, German Shepherd, Golden Retrievers, Scotties, Westies and Pointers) may be more likely to develop this type of cancer. Males and females are equally at risk. In most cases, we cannot tell what causes lymphosarcoma.

Types of Lymphosarcoma

Lymphosarcoma can be divided up into 5 different forms which depend upon the primary (predominant) site of the tumor.

1. External lymph nodes: The most common form is involvement of one or more of the external lymph nodes. Some dogs may not feel sick or may have only very mild signs such as tiredness or decreased appetite. Other dogs may have more severe signs such as weight loss, vomiting, diarrhea, excessive thirst or urination, weakness or difficulty breathing. The severity of the signs depends upon the extent of the tumor and on whether the cancer has caused changes in organ function. In many cases, the only noticeable sign is an enlargement of the lymph nodes under the neck, behind the knees or in front of the shoulders. Other organs, such as the liver, spleen and bone marrow can be involved as well.

2. Gastrointestinal tract: A second form is involvement of the gastrointestinal tract. Dogs with this type of lymphosarcoma may have vomiting, diarrhea, weight loss or a decreased appetite.

3. Mediastinal: The mediastinum is a term used for a special aggregation of lymphoid tissue in the chest. Dogs with this type of lymphosarcoma often are seen because of difficulty breathing or excessive urination/thirst.

4. Skin: Lymphosarcoma can also start in the skin. This is known as cutaneous lymphosarcoma. Dogs with cutaneous lymphosarcoma can have flaky, scaly, reddened skin and be itchy. They may also have lumps in the skin, which can ulcerate and cause discomfort. The footpads and gums can also be involved. Other organs such as lymph nodes, liver spleen and bone marrow are variably involved.

5. Bone marrow: If the cancer were confined to the bone marrow, we would call this leukemia. The signs that we see in dogs are usually related to decreased numbers of normal cells (such as red blood cells which 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.

Diagnosis/Initial evaluation

A complete evaluation of a dog suspected of having lymphosarcoma involves obtaining a biopsy or aspirate of the affected tissues and a search for tumor in other locations (this is what we call staging). A complete blood count (CBC), a serum chemistry profile and urinalysis 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 enlarged internal lymph nodes, lung involvement or an enlarged mediastinum. A bone marrow aspirate allows us to look for involvement of the bone marrow. Once we have these results, we can then decide upon the best treatment for an individual dog.

Treatment and Prognosis
Chemotherapy is the mainstay of treatment for lymphosarcoma. Lymphosarcoma is very sensitive to chemotherapy and up to 80% of dogs treated will go into remission. The definition of remission is the complete disappearance of detectable cancer. A remission is NOT a cure but it does allow your pet to experience a good quality of life. It is important to remember this because chemotherapy should not be discontinued when a remission is achieved. The length of remission depends upon many factors including the primary site, how sick an animal is at the start of treatment and the extent of disease. For those dogs that have the most common type (external lymph nodes enlargement), the average remission time is usually around 8-10 months with an overall survival time of about 1 year.

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 liver and kidney function). On a typical schedule, your dog will receive weekly treatments for the first 4-6 months. Several different drugs (L-asparaginase, vincristine, Cytoxan and Adriamycin) are alternated in order to reduce the chance that the tumor cells will become resistant and to reduce the risk of side effects. Some of the drugs are given as an injection and some are given orally (this can be done at home). If your dog 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 dogs will 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 dogs that do respond and have extra time.

Most dogs will tolerate their chemotherapy well and have minimal side effects. Serious side effects are only seen in 5-10% of the patients treated. These include nausea, vomiting, and loss of appetite, diarrhea, extreme tiredness or infection. Hair loss or slow hair growth may also occur in certain instances. Adriamycin can cause damage to the heart muscle if given multiple times, though most dogs do not receive enough of this drug to be a concern. Cytoxan can cause irritation to the bladder wall in a small percentage of dogs. If this occurs, you will see changes in urination (blood in the urine, straining to urinate, frequent urination). Please also see our handout “Chemotherapy in Small Animals” for further information.