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Lymphoma

Issue Description

Lymphoma is one of the most common malignant tumors to occur in dogs. The cause is genetic, but there also suspected environmental factors involved.

Other Names

Lymphosarcoma

Breeds Commonly Affected

- Boxer
- Scottish Terrier
- Basset Hound
- Airedale Terrier
- Chow Chow
- German Shepherd Dog
- Poodle
- St. Bernard
- Bulldog
- Beagle
- Rottweiler
- Golden Retriever - The Golden Retriever is especially susceptible to developing lymphoma, with a lifetime risk of 1:8.

Classification

The cancer is classified into low and high grade types. Classification is also based on location. The four location types are multicentric, mediastinal, gastrointestinal, and extranodal (involving the kidney, central nervous system, skin, heart, or eye). Multicentric lymphoma, the most common type (by greater than 80 percent), is found in the lymph nodes, with or without involvement in the liver, spleen, or bone marrow. Mediastinal lymphoma occurs in the lymph nodes in the thorax and possibly the thymus.

Gastrointestinal lymphoma occurs as either a solitary tumor or diffuse invasion of the stomach or intestines, with or without involvement in the surrounding lymph nodes, liver or spleen. Classification is further based on involvement of B-lymphocytes or T-lymphocytes. Approximately 70 percent are B-cell lymphoma. Cutaneous lymphoma can be classified as epitheliotropic (closely conforming to the epidermis) or non-epitheliotropic. The epitheliotropic form is typically of T-cell origin and is also called mycosis fungoides. The non-epitheliotropic form is typically of B-cell origin.

Symptoms

General signs and symptoms include depression, fever, weight loss, loss of appetite, and vomiting. Lymphoma is the most common cancerous cause of hypercalcemia (high blood calcium levels) in dogs. It can lead to the above signs and symptoms plus increased water drinking, increased urination, and cardiac arrhythmias. Hypercalcemia in these cases is caused by secretion of parathyroid hormone-related protein.

Multicentric lymphoma presents as painless enlargement of the peripheral lymph nodes. This is seen in areas such as under the jaw, the armpits, the groin, and behind the knees. Enlargement of the liver and spleen causes the abdomen to distend. Mediastinal lymphoma can cause fluid to collect around the lungs, leading to coughing and difficulty breathing. Hypercalcemia is most commonly associated with this type.

Gastrointestinal lymphoma causes vomiting, diarrhea, and melena (digested blood in the stool). Low serum albumin levels and hypercalcemia can also occur.

Lymphoma of the skin is an uncommon occurrence. The epitheliotropic form typically appears as itchy inflammation of the skin progressing to nodules and plaques. The non-epitheliotropic form can have a wide variety of appearances, from a single lump to large areas of bruised, ulcerated, hairless skin. The epitheliotropic form must be differentiated from similar appearing conditions such as pemphigus vulgaris, bullous pemphigoid, and lupus erythematosus.

Signs for lymphoma in other sites depend on the location. Central nervous system involvement can cause seizures or paralysis. Eye involvement, seen in 20 to 25 percent of cases, can lead to glaucoma, uveitis, bleeding within the eye, retinal detachment, and blindness. Lymphoma in the bone marrow causes anemia, low platelet count, and low white blood cell count.

Diagnosis

Biopsy of affected lymph nodes or organs confirms the diagnosis, although a needle aspiration of an affected lymph node can increase suspicion of the disease. X-rays, ultrasound, blood analysis, and bone marrow biopsy reveal other locations of the cancer. The stage of the disease is important to treatment and prognosis.

- Stage I - only one lymph node or lymphoid tissue in one organ involved.
- Stage II - lymph nodes in only one area of the body involved.
- Stage III - generalized lymph node involvement.
- Stage IV - any of the above with liver or spleen involvement.
- Stage V - any of the above with blood or bone marrow involvement.

Each stage is divided into those with systemic symptoms (loss of appetite, weight loss, etc.) and those without.

Treatment

Complete cure is rare with lymphoma and treatment tends to be palliative, but long remission times are possible with chemotherapy. With effective protocols, average first remission times are 6 to 8 months. Second remissions are shorter and harder to accomplish. Average survival is 9 to 12 months. The most common treatment is a combination of cyclophosphamide, vincristine, prednisone, L-asparaginase, and doxorubicin. Other chemotherapy drugs such as chlorambucil, lomustine (CCNU), cytosine arabinoside, and mitoxantrone are sometimes used in the treatment of lymphoma by themselves or in substitution for other drugs. In most cases, appropriate treatment protocols cause few side effects, but white blood cell counts must be monitored.

Allogenic stem cell transplantation (as is commonly done in humans) has recently shown to be a possible treatment option for dogs. Most of the basic research on transplantation biology was generated in dogs.

When cost is a factor, prednisone used alone can improve the symptoms dramatically, but it does not significantly affect the survival rate. The average survival times of dogs treated with prednisone and untreated dogs are both one to two months. Using prednisone alone can cause the cancer to become resistant to other chemotherapy agents, so it should only be used if more aggressive treatment is not an option.

Isotretinoin can be used to treat cutaneous lymphoma.

Prognosis

Untreated dogs have an average survival time of sixty days. Lymphoma with a histologic high grade generally respond better to treatment but have shorter survival times than dogs with low grade lymphoma. Dogs with B-lymphocyte tumors have a longer survival time than T-lymphocyte tumors. Mediastinal lymphoma has a poorer prognosis than other types, especially those with hypercalcemia. Clinical stage and substage have some prognostic value, with poorer prognosis associated with Stage V disease, and with substage b (clinical illness at time of presentation).

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