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Acute Lymphoid Leukemia

Issue Description

Leukemia is a cancer of the blood and causes a large increase of white blood cells (leukocytes) either in the circulation or in the bone marrow. Leukemia can come from bone marrow or from lymph node cells.

Other Names

Leukemia, Canine Leukemia, ALL, Chronic Lymphocytic Leukemia, CLL, Chronic Myelogenous Leukemia, CML, Chronic Eosinophilic Leukemia, Hypereosinophilic Syndrome

Types Of Canine Leukemia

Acute lymphoid leukemia (ALL) develops rapidly. Symptoms include loss of appetite, swelling of the lymph nodes, panting, pica (obsessive eating of non-food items such as clay, dirt, etc.), fever, bleeding, vomiting, pale gums, anxiousness. Infections will occur and are triggered by not having enough healthy, fully functional white blood cells. That as a result can cause rapid death if not treated immediately.

Contrary to humans, where acute leukemia is one of the most common childhood cancers, this cancer is mostly reported in mature dogs, not puppies or young animals.

Treatment for acute leukemia is similar to chronic leukemia but success rates are very poor. Most dogs live only a very short time after the disease has been diagnosed.

Chronic leukemia (CLL or CML) develops over time. The number of white blood cells increases less rapidly and the disease gets worse slowly over time. Again, due to the increased number of white blood cells the body cannot be protected properly from viruses or infections and the immune system will be suppressed. In addition a failure of the bone marrow and infiltration of cancer cells into organs will occur.

Chronic eosinophilic leukemia is a disease in which too many eosinophils (a type of white blood cell) are found in the bone marrow, blood, and other tissues. Chronic eosinophilic leukemia may stay the same for many years, or it may progress quickly to acute leukemia.

The hypereosinophilic syndrome is a disease process characterized by a persistently elevated eosinophil count (≥ 1500 eosinophils/mm³) in the blood for at least six months without any recognizable cause after a careful workup, with evidence of involvement of either the heart, nervous system, or bone marrow. Although HS has no certain aetiology, evidence suggests a link with chronic eosinophilic leukemia as it shows similar characteristics and genetic defects.

Symptoms

Damage to the bone marrow, by way of displacing the normal bone marrow cells with higher numbers of immature white blood cells, results in a lack of blood platelets, which are important in the blood clotting process. This means patients with leukemia may become bruised, bleed excessively, or develop pinpoint bleeds (petechiae).

White blood cells, which are involved in fighting pathogens, may be suppressed or dysfunctional. This could cause the patient's immune system to be unable to fight off a simple infection or to start attacking other body cells. Because leukemia prevents the immune system from working normally, some patients experience frequent infection, ranging from infected tonsils, sores in the mouth, or diarrhea to life-threatening pneumonia or opportunistic infections.

Finally, the red blood cell deficiency leads to anemia, which may cause dyspnea and pallor.

Some patients experience other symptoms. These symptoms might include feeling sick, such as having fevers, chills, night sweats and other flu-like symptoms, or feeling fatigued. Some patients experience nausea or a feeling of fullness due to an enlarged liver and spleen; this can result in unintentional weight loss. If the leukemic cells invade the central nervous system, then neurological symptoms (notably headaches) can occur.

All symptoms associated with leukemia can be attributed to other diseases. Consequently, leukemia is always diagnosed through medical tests.

The word leukemia, which means 'white blood', is derived from the disease's namesake high white blood cell counts that most leukemia patients have before treatment. The high number of white blood cells are apparent when a blood sample is viewed under a microscope. Frequently, these extra white blood cells are immature or dysfunctional. The excessive number of cells can also interfere with the level of other cells, causing a harmful imbalance in the blood count.

Some leukemia patients do not have high white blood cell counts visible during a regular blood count. This less-common condition is called aleukemia. The bone marrow still contains cancerous white blood cells which disrupt the normal production of blood cells. However, the leukemic cells are staying in the marrow instead of entering the bloodstream, where they would be visible in a blood test. For an aleukemic patient, the white blood cell counts in the bloodstream can be normal or low. Aleukemia can occur in any of the four major types of leukemia, and is particularly common in hairy cell leukemia.

Diagnosis

Leukemia is diagnosed by examination of the bone marrow and blood.

Treatment

Treatments are done to reduce the number of white blood cells and lead normally to a temporary remission. In most cases the number of white cells will increase again, and as soon as the critical number is reached, treatments can be repeated. This remission – re-treatment can be done many times. Unfortunately, sooner or later, depending on individual cases, the chronic leukemia will turn into acute leukemia.

Some dogs have been known to live several months or even years until the acute leukemia takes over.

Research

Significant research into the causes, diagnosis, treatment, and prognosis of leukemia is being done. Hundreds of clinical trials are being planned or conducted at any given time. Studies may focus on effective means of treatment, better ways of treating the disease, improving the quality of life for patients, or appropriate care in remission or after cures.

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