

Symptoms and Signs of Hairy Cell Leukemia

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ABOUT THE STUDY

Hairy Cell Leukaemia (HCL) is a type of leukaemia in which abnormal B-lymphocytes, or white blood cells, grow in large numbers. Leukemia is a blood cancer in which the patient's white blood cells is abnormal or immature. Red blood cells deliver oxygen, white blood cells fight infection, and platelets aid blood clot. The bone marrow produces these cells from stem cells. A single WBC stem cell in leukaemia becomes abnormal and proliferates uncontrollably. As a result, the blood contains a large number of immature cells which cannot function properly. Hairy Cell Leukemia is a type of leukaemia that affects the hair follicles.

Hairy Cell Leukaemia (HCL) is a kind of leukaemia in which abnormal B-lymphocytes, a type of white blood cell, grow in huge numbers. These abnormal cells appear to be covered with tiny hairs when examined under a microscope. Hairy cell leukaemia appears to have a genetic component to its development. Certain genes are related to the disease, increasing the patient's susceptibility to cancer. These include BRAF gene mutations and cyclin D1 protein overexpression.

The most prevalent locations for cancer cells are the bone marrow, liver, and spleen. Hairy cell leukaemia is more frequent in men than in women, and it generally strikes between the ages of 50 and 60. Hairy cell leukaemia has symptoms that are similar to those of other blood malignancies.

Weight loss, tiredness, easy bruising, anemia, and recurring infections are among them. Chemotherapy, immunotherapy, surgery, and targeted treatment are all used to treat hairy cell leukaemia. For effective therapy, accurate diagnosis is essential.

Hairy cell leukemia causes and risk factors

This appears being a genetic component to hairy cell leukaemia. Some environmental factors may also increase the cancer risk. Hairy cell leukaemia is unknown cause, but it appears to have a genetic component. Hairy cell leukaemia has been associated with mutations in the BRAF gene and cyclin D₁ protein overexpression. The spleen and bone marrow are infected with

immature B-cells. This interferes with the production of other blood cells, resulting in some of the symptoms of leukaemia.

Risk factors

- Long-term exposure to organic solvents such as benzene, other aromatic solvents, petroleum products, and agricultural pesticides
- Hairy cell leukaemia or other cancer of the blood within that family
- Non-malignant disorders such as myelofibrosis, aplasia of the bone marrow, amyloidosis, and granulomatous diseases are present

Hairy cell leukaemia symptoms

Hairy cell leukaemia symptoms were caused by a build-up of aberrant hairy cells, which leads to a lack of regular blood cells, resulting in an enlarged spleen and weakened immunity. Hairy cell leukaemia symptoms are often non-specific, such as viral infections. Symptoms include weakness, fatigue, fever, weight loss, recurrent infections, and bleeding. Affected individuals frequently seek medical treatment owing to frequent illness with symptoms such as weakness, physical fatigue, fever, weight loss, recurrent infections, and bleeding. A large number of cases are asymptomatic and are discovered during routine lab tests. Hairy cell leukaemia reduces the number of all blood cells, including normal white blood cells, red blood cells, and platelets. This is the cause of the majority of the patient's symptoms and signs also include:

- Anemia-related weakness and fatigue
- Thrombocytopenia-related easy bruising and bleeding
- Fever, night sweats, and weight loss similar to other blood malignancies
- Recurrent infections due to a decrease in normal white blood cells
- Abdominal discomfort due to enlarged spleen in most cases, lymph nodes are untouched. Pseudomonas aeruginosa, and fungal are some of the most common organisms that cause illnesses.
- Immunologic disorders such as scleroderma, polymyositis, and Polyarteritis Nodosa (PAN) are also associated conditions.

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Diagnosis of hairy cell leukemia

Blood and bone marrow tests are used to detect hairy cell leukaemia. If the patient's symptoms suggest to leukaemia, the doctor will have to conduct more tests to confirm the diagnosis. Hairy cell leukaemia is diagnosed using the following tests:

A Complete Blood Count (CBC) may reveal the following abnormalities when observed under the microscope:

- A decrease in the number of normal red and white blood cells, and also platelets.
- In some patients, a high number of hairy cells lead to an increase in white blood cells.
- Peripheral Blood Smear: Under a microscope, fine hair-like cytoplasmic projections is seen in abnormal cells.
- Bone marrow aspiration and biopsy: Due to a lack of adequate cells, bone marrow aspiration frequently results in dry taps. A bone marrow biopsy is helpful in diagnosis.
- Antigens on the cells are also identified using immunological testing on blood and bone marrow samples.

Spleen and Liver: Tissue samples of the liver and spleen reveal cancer cell infiltration.

- Genetic tests: Genetic tests are used to search for abnormalities in the patient's genes that increase the risk of leukaemia.
- Imaging Studies: Chest X-rays, bone scans, CT scans, MRIs, and ultrasounds are commonly used to check for disorders such as an enlarged spleen and infections.

Hairy cell leukemia treatment

Hairy cell leukaemia can be treated medically or surgically. Hairy cell leukaemia treatment is dependent on the stage of the disease. The following is a list of therapies:

- Chemotherapy: Cladribine and pentostatin are two chemotherapy drugs that are used to treat hairy cell leukaemia.
- Biological therapy: This treatment comprises cancer-fighting monoclonal antibodies such as interferon alpha and rituximab.
- Chemotherapy and biological therapy are sometimes coupled to improve the effectiveness of the treatment.
- Patients who do not react to treatments or who have bleeding due to a low platelet count may have their spleen surgically removed.