

Leukemia Cancer

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Abstract: A cancer of blood-forming tissues, hindering the body's ability to fight infection. Leukemia is a cancer of the blood or bone marrow. Bone marrow produces blood cells. Leukemia can happen when there is a problem with the production of blood cells. It usually affects the leukocytes, or white blood cells. It is most likely to affect people over the age of 55 years, but it is also the most common cancer in those aged under 15 years.

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1. Overview

Leukemia is a cancer of the blood cells. There are several broad categories of blood cells, including red blood cells (RBCs), white blood cells (WBCs), and platelets. Generally, leukemia refers to cancers of the WBCs. WBCs are a vital part of your immune system. They protect your body from invasion by bacteria, viruses, and fungi, as well as from abnormal cells and other foreign substances. In leukemia, the WBCs don't function like normal WBCs. They can also divide too quickly and eventually crowd out normal cells. WBCs are mostly produced in the bone marrow, but certain types of WBCs are also made in the lymph nodes, spleen, and thymus gland. Once formed, WBCs circulate throughout your body in your blood and lymph, concentrating in the lymph nodes and spleen.

2. Types of Leukemia

2.1 Acute lymphocytic leukemia (ALL). This is the most common type of leukemia in young children. ALL can also occur in adults.

2.2 Acute myelogenous leukemia (AML). AML is a common type of leukemia. It occurs in children and adults. AML is the most common type of acute leukemia in adults.

2.3 Chronic lymphocytic leukemia (CLL). With CLL, the most common chronic adult leukemia, you may feel well for years without needing treatment.

2.4 Chronic myelogenous leukemia (CML). This type of leukemia mainly affects adults. A person with CML may have few or no symptoms for months or years before entering a phase in which the leukemia cells grow more quickly.

2.5 Other types. Other, rarer types of leukemia exist, including hairy cell leukemia, myelodysplastic syndromes and myeloproliferative disorders.

3. Causes

Leukemia happens when the DNA of immature blood cells, mainly white cells, becomes damaged in some way. This causes the blood cells to grow and divide continuously, so that there are too many. Healthy blood cells die after a while and are replaced by new cells, which are produced in

the bone marrow. The abnormal blood cells do not die when they should. They accumulate, occupying more space. As more cancer cells are produced, they stop the healthy white blood cells from growing and functioning normally, by crowding out space in the blood. Essentially, the bad cells crowd out the good cells in the blood.

4. Risk Factors

4.1 Previous cancer treatment: People who've had certain types of chemotherapy and radiation therapy for other cancers have an increased risk of developing certain types of leukemia.

4.2 Genetic disorders: Genetic abnormalities seem to play a role in the development of leukemia. Certain genetic disorders, such as Down syndrome, are associated with an increased risk of leukemia.

4.3 Exposure to certain chemicals: Exposure to certain chemicals, such as benzene which is found in gasoline and is used by the chemical industry is linked to an increased risk of some kinds of leukemia.

4.5 Smoking: Smoking cigarettes increases the risk of acute myelogenous leukemia.

Family history of leukemia: If members of your family have been diagnosed with leukemia, your risk of the disease may be increased.

5. Symptoms

Leukemia symptoms vary, depending on the type of leukemia. Common leukemia signs and symptoms include:

- Fever or chills
- Persistent fatigue, weakness
- Frequent or severe infections
- Losing weight without trying
- Swollen lymph nodes, enlarged liver or spleen
- Recurrent nosebleeds
- Tiny red spots in your skin
- Excessive sweating, especially at night
- Bone pain or tenderness

6. Diagnosis (Test)

There are a number of different tests that can be used to diagnose leukemia. A complete blood count determines the numbers of RBCs, WBCs, and platelets in the blood. Looking at your blood under a microscope can also determine if the cells have an abnormal appearance. Tissue biopsies can be taken from the bone marrow or lymph nodes to look for evidence of leukemia. These small samples can identify the type of leukemia and its growth rate. Biopsies of other organs such as the liver and spleen can show if the cancer has spread.

7. Treating Leukemia

7.1 Chemotherapy : uses drugs to kill leukemia cells. Depending on the type of leukemia, you may take either a single drug or a combination of different drugs.

7.2 Radiation therapy : uses high-energy radiation to damage leukemia cells and inhibit their growth. Radiation can be applied to a specific area or to your entire body.

7.3 Stem cell transplantation : replaces diseased bone marrow with healthy bone marrow, either your own (called autologous transplantation) or from a donor (called allogeneic transplantation). This procedure is also called a bone marrow transplant.

7.4 Biological or immune therapy : uses treatments that help your immune system recognize and attack cancer cells.

7.5 Targeted therapy uses : medications that take advantage of vulnerabilities in cancer cells. For example, imatinib (Gleevec) is a targeted drug that's commonly used against CML.

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