

Leukemia

What is leukemia?

Leukemia is large numbers of abnormal white blood cells are produced in the bone marrow. These abnormal white cells crowd the bone marrow and flood the bloodstream, but they cannot perform their proper role of protecting the body against disease because they are defective.

The bone marrow is the soft, spongy center of the long bones that produces the three major blood cells: white blood cells to fight infection; red blood cells that carry oxygen; and platelets that help with blood clotting and stop bleeding. When a child has leukemia, the bone marrow, for an unknown reason, begins to make white blood cells that do not mature correctly, but continue to reproduce themselves. Normal, healthy cells only reproduce when there is enough space for them to fit. The body can regulate the production of cells by sending signals when to stop. With leukemia, these cells do not respond to the signals to stop and reproduce, regardless of space available

Who is affected by leukemia?

Leukemia can occur at any age, although it is most commonly seen in children between 2 and 6 years of age. The disease occurs slightly more frequently in males than in females, and is more commonly seen in Caucasian children than in African-American children, or children of other races.

What causes leukemia in children?

1-The majority of childhood leukemias are acquired genetic diseases. This means that gene mutations and chromosome abnormalities in cells occur sporadically (by chance).

2-The immune system plays an important role in protecting the body from diseases, and possibly cancer. An alteration or defect in the immune system may increase the risk for developing leukemia. Factors such as exposure to certain viruses, environmental factors, chemical exposures, and various infections have been associated with damage to the immune system.

▪

What are the different types of • leukemia?

There are three main types of leukemia, including the following:

acute lymphocytic leukemia (ALL)

Acute lymphocytic lymphoblastic or lymphoid,. The lymphocytes normally fight infection., the bone marrow makes too many of these lymphocytes and they do not mature correctly. The lymphocytes overproduce, thus, crowding out other blood cells. Immature blood cells (blasts) do not work properly to fight infection..

acute myelogenous leukemia (AML)
Acute myelogenous leukemia (AML), also called granulocytic, myelocytic, myeloblastic, or myeloid,.. The granulocytes normally fight infection. With acute myelogenous leukemia, the bone marrow makes too many of these cells and they do not mature correctly. The granulocytes overproduce, thus, crowding out other blood cells. Immature blood cells (blasts) do not work properly to fight infection

chronic myelogenous leukemia (CML)
Chronic myelogenous leukemia (CML) is
uncommon in children

**What are the symptoms of leukemia?
When leukemia occurs, the abnormal white blood cells (blasts) begin to reproduce very rapidly and begin crowding out and competing for nutrients and space with the other healthy cells. The following are the most common symptoms of leukemia. However, each child may experience symptoms differently. Symptoms may include**

1-anemia :When red blood cells are unable to be produced because of the crowding in the marrow, anemia is present. With anemia, the child may appear tired, pale, and may breathe faster to compensate for the decrease in oxygen carrying capacity. The number of red blood cells on a blood count will be below normal

2-bleeding and/or bruising

When platelets are unable to be produced because of the crowding in the marrow, bleeding can occur and the child may begin to bruise more easily. Petechia are tiny red dots often seen on the skin of a child with low number of platelets. Petechia are very small blood vessels that have "leaked" or bled. The number of platelets on a blood count will be below normal. Thrombocytopenia is the term used for a decreased number of platelets.

3-recurrent infections

Although there may be an unusually high number of white blood cells on a blood count of a child with leukemia, these white blood cells are immature and do not fight infection. The child may have had repetitive viral or bacterial infections over the past few weeks. The child with leukemia often shows symptoms of an infection such as fever, runny nose, and cough.

4-bone and joint pain

Pain in bones and joints is another common symptom of leukemia. This pain is usually a result of the bone marrow being overcrowded and "full."

5-abdominal distress

Abdominal pain may also be a symptom of leukemia. Leukemia cells can collect in the kidney, liver, and spleen, causing enlargement of these organs. Pain in the abdomen may cause a child to have loss of appetite and weight loss.

6-swollen lymph nodes-

The child may also have swelling in the lymph nodes under the arms, in the groin, chest, and in the neck. Lymph nodes are responsible for filtering the blood. Leukemia cells may collect in the nodes, causing swelling.■

7-difficulty breathing (dyspnea)With T-cell ALL, these leukemia cells tend to clump together around the thymus. This mass of cells present in the middle of the chest can cause pain and difficulty breathing (dyspnea). Wheezing, coughing, and/or painful breathing requires immediate medical attention.

With acute leukemia (ALL or AML), these symptoms may occur suddenly in a matter of days or weeks.

With chronic leukemia (CML), these symptoms may develop slowly over months to years.

How is leukemia diagnosed?

In addition to a complete medical history and physical examination, diagnostic procedures for leukemia may include:

***bone marrow aspiration and/or biopsy - a procedure that involves taking a small amount of bone marrow fluid (aspiration) and/or solid bone marrow tissue (called a core biopsy), usually from the hip bones, to be examined for the number, size, and maturity of blood cells and/or abnormal cells.**

■

***complete blood count (CBC) - a measurement of size, number, and maturity of different blood cells in a specific volume of blood.**

***additional blood tests - may include blood chemistries, evaluation of liver and kidney functions, and genetic studies.**

***computed tomography scan (Also called a CT or CAT scan.)**

***magnetic resonance imaging (MRI)**

***X-ray**

***lymph node biopsy - a sample of tissue is removed from the lymph node and examined under a microscope.**

Treatment for leukemia:

- *chemotherapy**

- *intrathecal medications/chemotherapy (medications are inserted through a needle into the spinal cord into the area called the subarachnoid space)**

- *radiation therapy**

- *bone marrow transplantation**

- *medications (to prevent or treat damage to other systems of the body caused by leukemia treatment)**

- *medications (for nausea and side effects of treatment)**

- *blood transfusions (red blood cells, platelets)**

- * antibiotics (to prevent/treat infections)**

Nursing care

- *prevent care ;give special attention to mouth care**
- *inspect the skin frequently**
- *use interventions for anemia and thrombocytopenia**
- *give increased fluids to flush chemotherapy through the kidney**
- *provide a high –protein ,high- calorie**
- *provide pain relief**
- *note the side effects of radiation and chemotherapy**
- *help the child and the family allay their fears and guilt**
- *help the child adjust to change in body image**