Leukemia

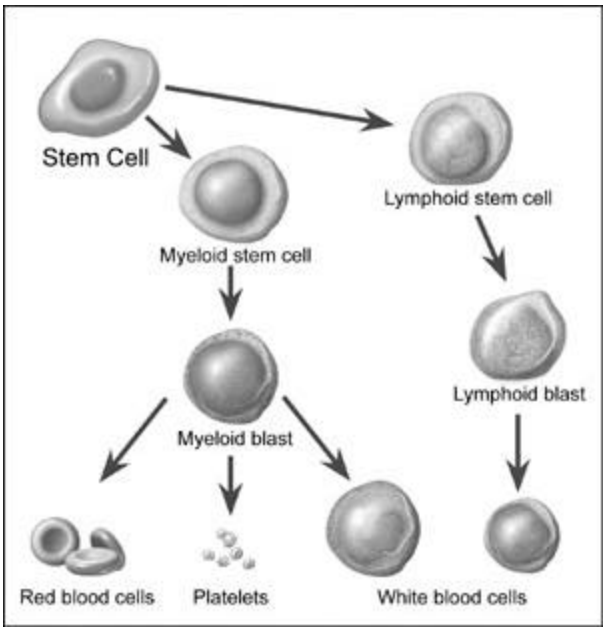
Leukemia is a type of Cancer. Cancer is a group of many related diseases. All cancers begin in cells, which make up blood and other tissues. Normally, cells grow and divide to form new cells as the body needs them. When the cells grow old, they die, and new cells take their place.

Some times, this orderly process goes wrong. New cells form when the body does not need them, and old cells do not die when they should. Leukemia is cancer that begins in blood cells.

NORMAL BLOOD CELLS:

Blood cells form in the bone marrow. Bone marrow is the soft material in the center of most bones.

Immature blood cells are called stem cells and blasts. Most blood cells mature in the bone marrow and then move into the blood vessels. Blood flowing through the blood vessels and heart is called the peripheral blood.



Picture of blood cells maturing from stem cells.

The bone marrow makes different types of blood cells. Each type has a special function:

White blood cells help fight infection.

Red blood cells carry oxygen to tissues throughout the body.

Platelets help form blood clots that control bleeding.

LEUKEMIA CELLS:

In people with leukemia, the bone marrow produces abnormal cells are leukemia cells. At first, leukemia cells function almost normally. In time, they may crowd out normal white blood cells, red blood cells and platelets. this makes it hard for blood to do its work.

TYPES OF LEUKEMIA:

The types of leukemia are grouped by how quickly the disease develops and gets worse. leukemia is either *chronic* (gets worse slowly) or *acute* (gets worse quickly):

- *Chronic Leukemia* Early in the disease, the abnormal blood cells still do their
- *Acute Leukemia* The blood cells are very abnormal. They cannot carry out

leukemia worsens quickly.

The types of leukemia are also grouped by the type of white blood cell that is affected.Leukemia can arise in lymphoid cells or myeloid cells. Leukemia that affects lymphoid cells is called *lymphoblastic* leukemia. Leukemia that affects myeloid cells is called *myeloid* leukemia or *myelogenous* leukemia.

There are four common types of leukemia:

Chronic Lymphocytic Leukemia:

Chronic lymphoblastic leukemia, CLL accounts for about 7000 new cases of leukemia each year. Most often, people diagnosed with the disease are over age 55. It almost never affects children.

Chronic Myeloid Leukemia:

Chronic Myelogenous Leukemia, CML accounts for about 4400 new cases of leukemia each year. It affects mainly adults.

Acute Lymphocytic Leukemia:

Acute lymphoblastic leukemia, ALL accounts for about 3800 new cases of leukemia each year. It is the most common type of leukemia in young children. It also affects adults.

Acute Myeloid Leukemia:

Acute myelogenous leukemia, AML accounts for about 10600 new cases of leukemia each year. It is the most commin type of leukemia in young children. It also affects adults.

SYMPTOMS:

Common symptoms of leukemia may include:

- Fevers or night sweats
- Frequent infections
- Feeling weak and tired
- Head ache
- Bleeding and bruising easily
- Pain in the bones or joints
- Swelling or discomfort in the abdomen
- Swollen lymph nodes
- Weight loss

DIAGNOSIS

The exams and tests include the following:

- *Physical exam* The doctor checks for swelling of the lymph nodes, spleen and liver.
- *Blood tests* The lab checks the level of blood cells. Leukemia causes a very high level of white blood cells. It also causes low levels of platelets and haemoglobin, which is found inside red blood cells. The lab also may check the blood for signs that leukemia has affected the liver and kidneys.
- *Biopsy* The doctor removes some bone marrow form the hipbone or another large bone. A pathologist examines the sample under a microscope. The removal of tissue to look for cancer cells is called a biopsy. a biopsy is the only sure way to know whether leukemia cells are in the bone marrow.

There are two ways the doctor can obtain bone marrow. Some patients will have both procedures:

- Bone marrow aspiration The doctor uses a needle to remove samples of bone marrow.
- Bone marrow Biopsy The doctor uses a very thick needle to remove a small piece of bone and bone marrow.

Local anesthesia helps to make the patient more comfortable,

CYTOGENETICS

The lab looks at the chromosomes of cells from samples of peripheral blood, bone marrow, or lymph nodes. Our training was in the Cytogenetic part of the Diagnostics of the leukemia patients.

SPINAL TAP

The doctor removes the CSF (few drops). The lab checks the fluid (Cerebrospinal fluid) for leukemia cells or other signs of problems.

CHEST X-RAYS

The X-ray can reveal signs of disease in the chest.