

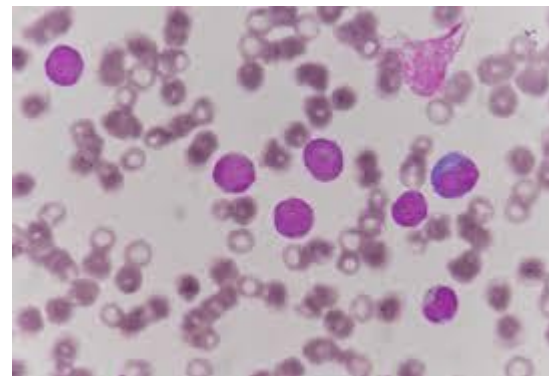


Day 0



Day 14

L.A.G.



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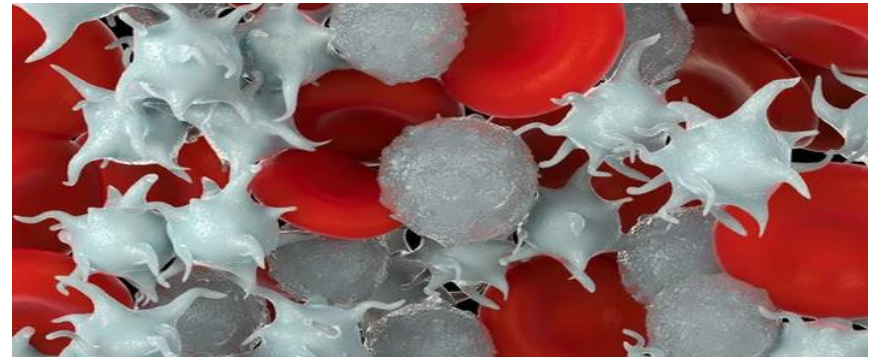
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Abstract

AML is a rare cancer of the blood and bone marrow. It is when abnormal myeloid cells interfere with normal functions of white blood cells, red blood cells, and platelets. We have used reliable scientific research tools like PubMed to find this information.

Our main observation from this research is that even though AML is very rare, the outcomes are fatal. We believe that AML being rare causes less awareness on the topic.



General Information

- Acute leukemia needs to be treated as soon as it is diagnosed, with the goal of inducing a remission (absence of leukemia cells in the body). Acute leukemias can often be cured with treatment. Chronic leukemias are unlikely to be cured with treatment, but treatments are often able to control cancer and manage symptoms.
- It can't be cured but it can be treated. There are less than 200,000 US cases a year.
- This type of cancer usually gets worse quickly if it is not treated.

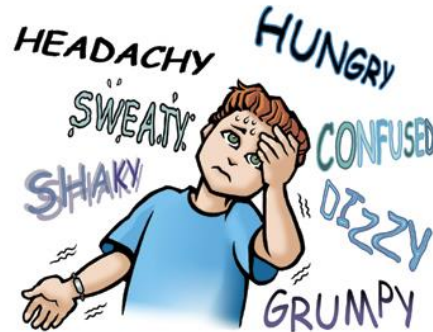
Is AML curable?

Treatment for AML can help manage symptoms. It can be applied to all stages of the cancer, but the faster treatment is given, the better the symptoms can be managed.

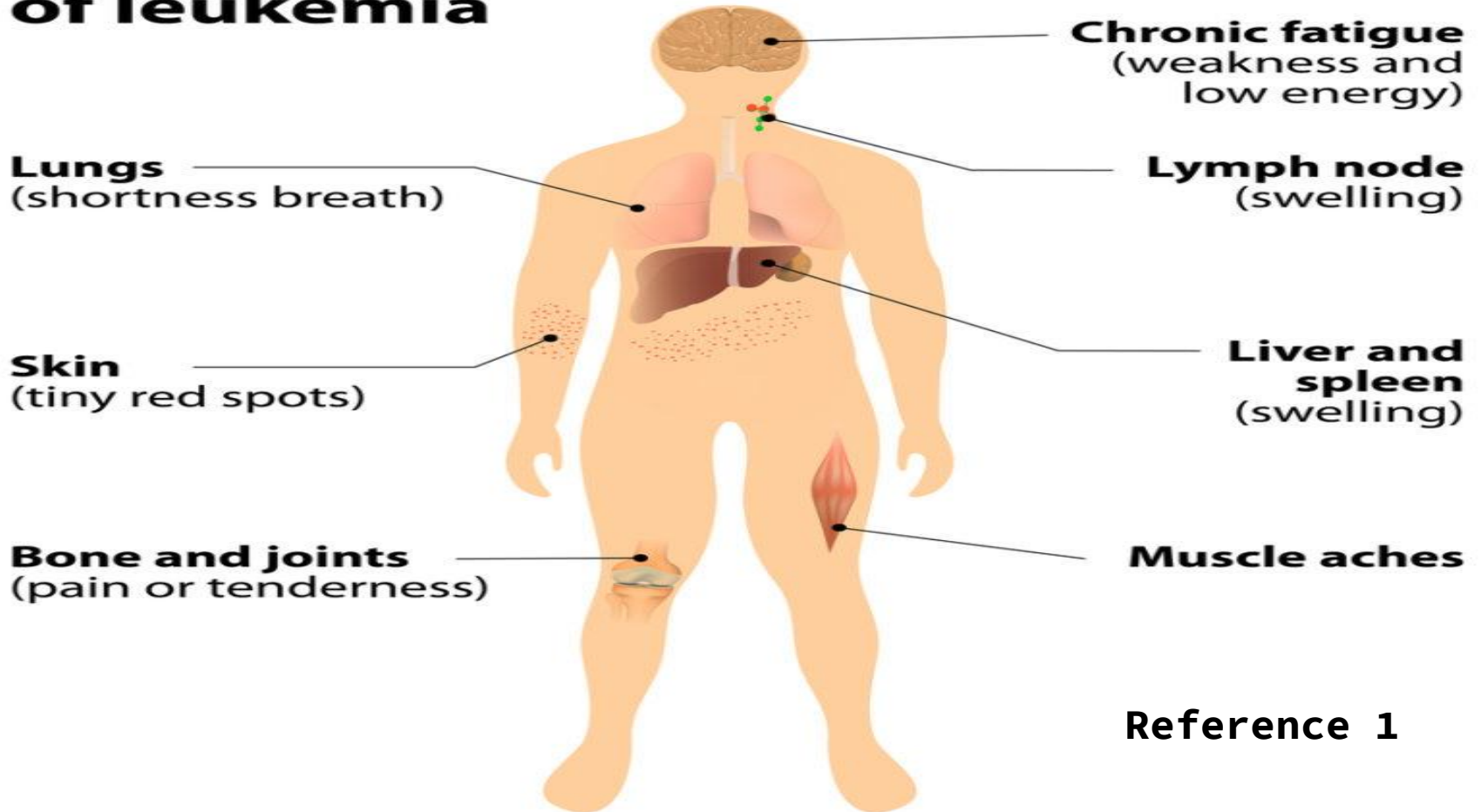
- **Intensive chemotherapy:** A drug is entered into the bloodstream (IV, injection, & pills).
- **Induction therapy-** complete remission (blood count is now normal, no leukemia found in bone marrow, there are no longer any signs/symptoms of AML).
- **Post-remission therapy-** a variety of different drugs to destroy any AML cells that can't be detected by medical tests.
- **Consolidation therapy-** stem cell transplantation
- **Stem Cell -** A medical procedure in which bone marrow that contains leukemia is destroyed. Then, undifferentiated stem cells are specialized to perform the function of healthy bone marrow.
- **Targeted Therapy:** targets leukemia specific genes, proteins, or the tissue that contributes to the growth and survival of leukemia. This treatment inhibits the growth and spread of leukemia cells while limiting damage to healthy cells.

Symptoms

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



Symptoms of leukemia



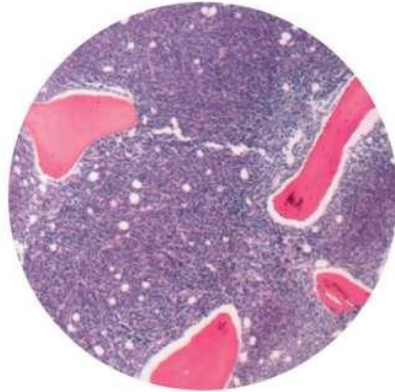
How does Leukemia form?

In general, leukemia is thought to occur when some blood cells acquire mutations in their DNA — the instructions inside each cell that guide its action. There may be other changes in the cells that have yet to be fully understood that could contribute to leukemia.

Healthy
bone marrow



Leukemia



Certain abnormalities cause the cell to grow and divide more rapidly and to continue living when normal cells would die. Over time, these abnormal cells can crowd out healthy blood cells in the bone marrow, leading to fewer healthy white blood cells, red blood cells and platelets, causing the signs and symptoms of leukemia.

How is leukemia classified?

- 1) **Undifferentiated AML - M0:** In this stage of AML, the bone marrow cells show no significant changes.
- 2) **Myeloblastic leukemia - M1:** Bone marrow cells show some signs of change
- 3) **Myeloblastic leukemia - M2:** Maturation of the bone marrow cells is beyond the promyelocyte stage.
- 4) **Promyelocytic leukemia - M3:** Most abnormal cells are early granulocytes, between myeloblasts and myelocytes in their development.
- 5) **Myelomonocytic leukemia - M4:** The bone marrow / circulating blood have variable amounts of monocytes and differentiated granulocytes is > 20 percent.
- 6) **Monocytic leukemia - M5:** This subset is divided into 2 categories. 1) is characterized by poorly differentiated monoblasts with lacy-appearing genetic material. 2) is characterized by a large # of monoblasts, promonocytes & monocytes.
- 7) **Erythroleukemia - M6:** This form of leukemia is characterized by abnormal red blood cell-forming cells.
- 8) **Megakaryoblastic leukemia - M7:** The blast cells in this stage looks like immature megakaryocytes or lymphoblasts and can be distinguished by extensive fibrous tissue deposits in the bone marrow.

D I E T

The ideal **diet** for **AML** contains all of these nutrients: Protein to help your body heal and strengthen your immune system. Get it from sources like fish, poultry, eggs, beans, peas, soy, and lean red meat. Carbohydrates for energy.

Good foods to Eat

- Turmeric and Ginger
- Onions and garlic.
- Fatty fish
- Whole grains.
- Dark leafy greens
- Nuts
- Peppers
- Tomatoes
- Olive oil
- Beets
- Green Tea
- Berries
- Sweet Potato

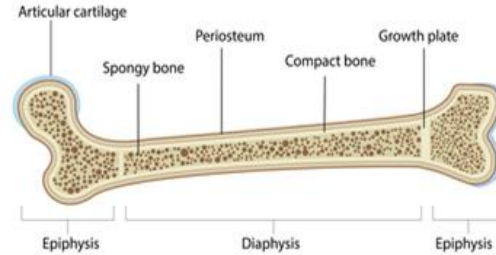
Bad foods to Eat

- Sugar
- Saturated Fats
- Trans Fats
- Omega 6 fatty acids
- Refined carbohydrates



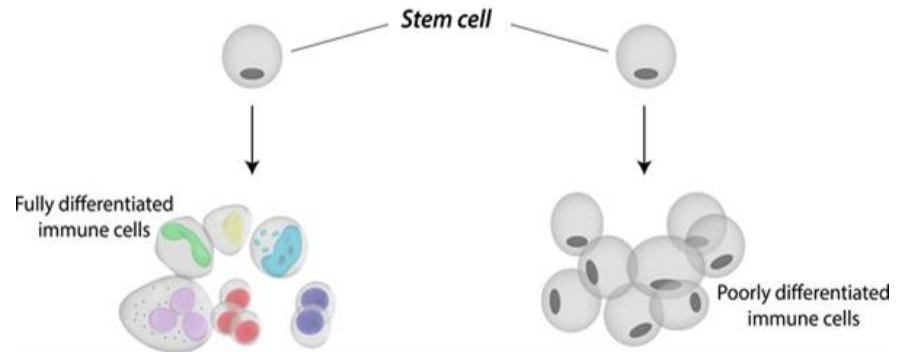
Mutated Chromosome

AML is characterized by a high degree of heterogeneity with respect to chromosome abnormalities, gene mutations, and changes in expression of multiple genes and microRNAs. Several chromosomal abnormalities such as monosomies or deletions and trisomy 8 are common in AML. Since the exact cause of AML is unknown, it may be able to occur randomly.



Healthy

Leukemia



Risk Factors

- **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.
- **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.
- **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.
- **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.

However, most people with known risk factors don't get leukemia. And many people with leukemia have none of these risk factors.

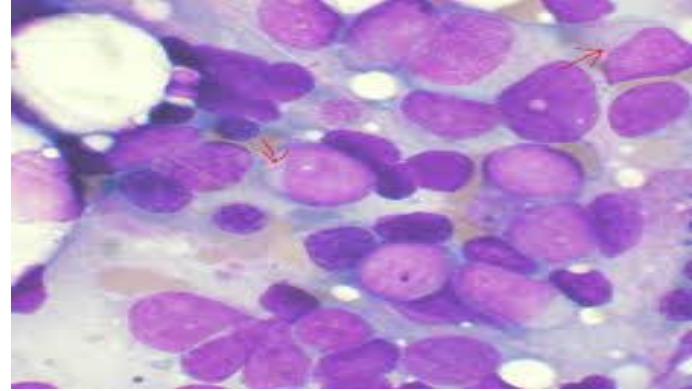
Statistics about AML

- **How common is AML?**

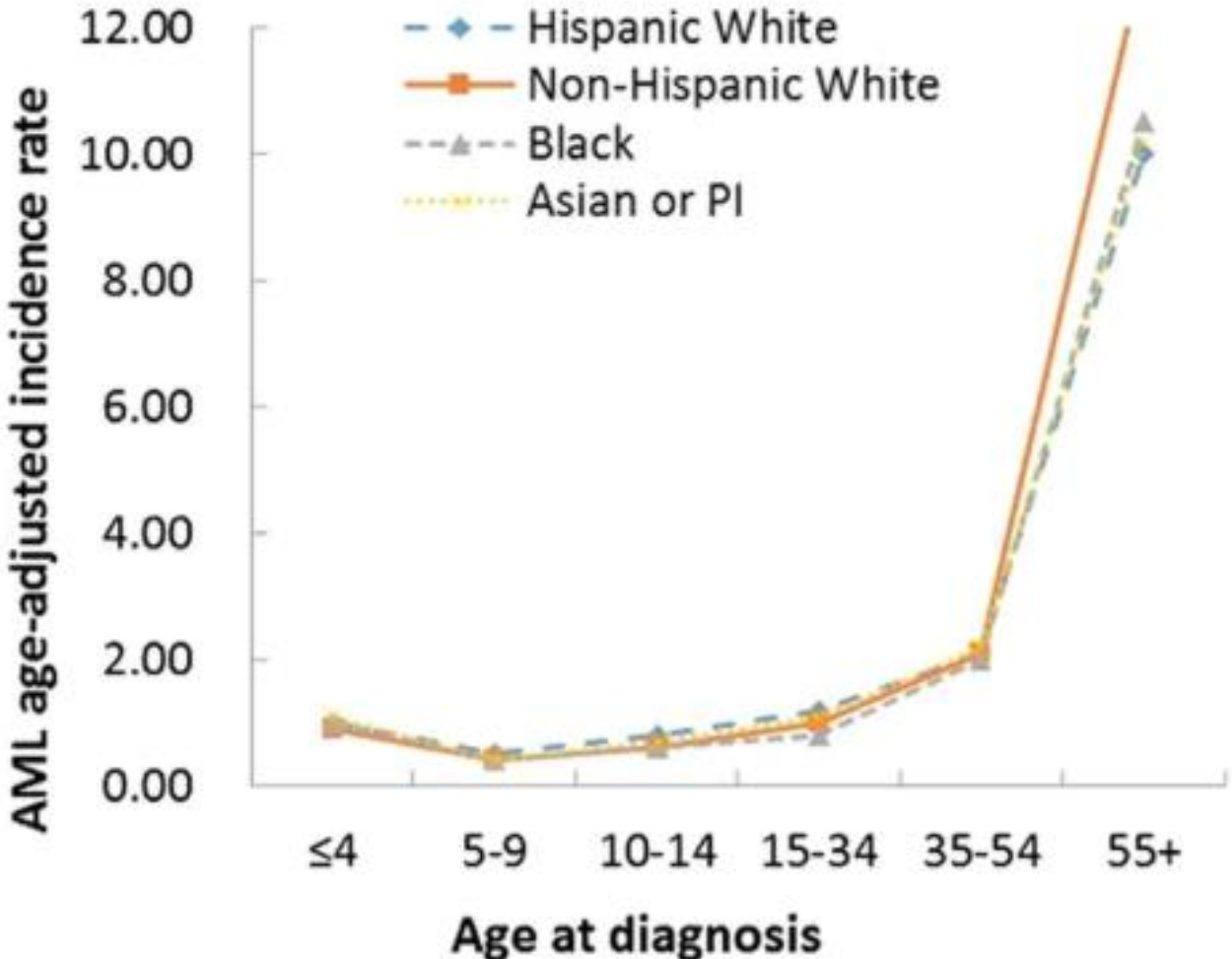
- Rare
- There are fewer than 200,000 US cases a year

- **Statistics & Risk factors**

- This year, an estimated 21,450 people of all ages (11,650 men and boys and 9,800 women and girls) in the United States will be diagnosed with AML. AML is the second most common type of leukemia diagnosed in adults and children, but most cases occur in adults. AML makes up 32% of all adult leukemia cases.
- AML can be diagnosed at any age, but it is uncommon in people under the age of 45. The average age of diagnosis is age 68.
- An estimated 10,920 deaths (6,290 men and boys and 4,630 women and girls) from AML will occur this year. The vast majority will be in adults.
- The 5-year survival rate tells you what percent of people live at least 5 years after the cancer is found. Percent means how many out of 100. The 5-year survival rate for people 20 and older with AML is approximately 24%. For people younger than 20, the survival rate is 67%.



Race affects AML



History

- The **first published description** of a case of leukemia in medical literature dates to 1827, when French physician **Alfred-Armand-Louis-Marie Velpeau** described a 63-year-old florist who developed an illness **characterized by fever, weakness, urinary stones, and substantial enlargement of the liver and spleen.**
- In 1845, a **series of patients who died with enlarged spleens and changes in the "colors and consistencies of their blood"** was reported by the Edinburgh-based pathologist J.H. Bennett; he used the term "leucocythemia" to describe this pathological condition.
- **The term "leukemia" was coined by Rudolf Virchow**, the renowned German pathologist, in 1856. As a pioneer in the use of the light microscope in pathology, **Virchow was the first to describe the abnormal excess of white blood cells** in patients with the clinical syndrome described by Velpeau and Bennett further advances in the understanding of acute myeloid leukemia occurred rapidly with the development of new technology.
- In 1877, **Paul Ehrlich developed a technique of staining blood films which allowed him to describe in detail normal and abnormal white blood cells.**
- Wilhelm Ebstein introduced the term **"acute leukemia" in 1889 to differentiate rapidly progressive and fatal leukemias from the more indolent chronic leukemias.** The term "myeloid" was coined by Neumann in 1869, as he was the first to recognize that **white blood cells were made in the bone marrow as opposed to the spleen.**
- The technique of bone marrow examination to diagnose leukemia was first described in 1879 by Mosler. Finally, in 1900 the myeloblast, which is the malignant cell in AML, was characterized by Naegeli, who divided the leukemias into "myeloid" and "lymphocytic"
- In 2008, AML became the **first cancer genome to be fully sequenced.** DNA extracted from leukemic cells were compared to unaffected skin. The **leukemic cells contained acquired mutations in several genes that had not previously been associated with the disease.**

Prognosis

The rate of leukemia has not changed much since the 1950s, but more people are surviving longer. ALL (childhood leukemia), for example, represents one of the most dramatic success stories in cancer treatment. Almost 90% of children diagnosed with the disease are cured. Adult patients treated for ALL have an 80% to 90% chance of attaining remission; about 40% of those who do so survive at least another 5 years, with a chance of a full cure. Patients treated for AML have a 60% to 70% chance of remission; about 30% of those survive at least 3 years, with a possibility of a full cure.

Adult patients treated for ALL have an 80% to 90% chance of attaining remission; about 40% of those who do so survive at least another 5 years, with a chance of a full cure. Patients treated for AML have a 60% to 70% chance of remission; about 20% of those survive at least 3 years, with a possibility of a full cure.

Reference

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