Difference Between AML and ALL

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Key Difference – AML vs ALL

Leukemias are the malignancies of the blood cells. These cells are produced in the bone marrow; consequently, any factor that can have an adverse impact on the bone marrows can impair the production of blood cells leading to the development of malignant cells. Acute myeloid leukemia or AML is a malignancy that is characterized by the abnormal proliferation of the immature white blood cells called myeloblasts. Acute lymphocytic leukemia (ALL) is a malignancy whose hallmark feature is the abnormally high number of lymphocytes or lymphoblasts in the bone marrow and peripheral blood. Hence the main difference between AML and ALL is that **the number of myeloblasts in the blood increases in AML while the number of lymphoblasts increases in ALL.**

What is AML?

Acute myeloid leukemia or AML is a malignancy that is characterized by the abnormal proliferation of the immature white blood cells called myeloblasts. The production of these cells happens in the bone marrow. Accumulation of immature myeloblasts in the bone marrow hinders the proliferation of other blood cells such as RBCs and platelets. This results in anemia, easy bruising and excessive bleeding following a minor injury. At the same time, the immature white blood cells are not capable of withstanding the invasion of the body by various pathogens. Therefore the affected patients are more prone to get infections and diseases that are caused by different infectious agents.

Causes

- Exposure to very high doses of radiation
- Long-term exposure to various chemicals
- Influence of various genetic factors

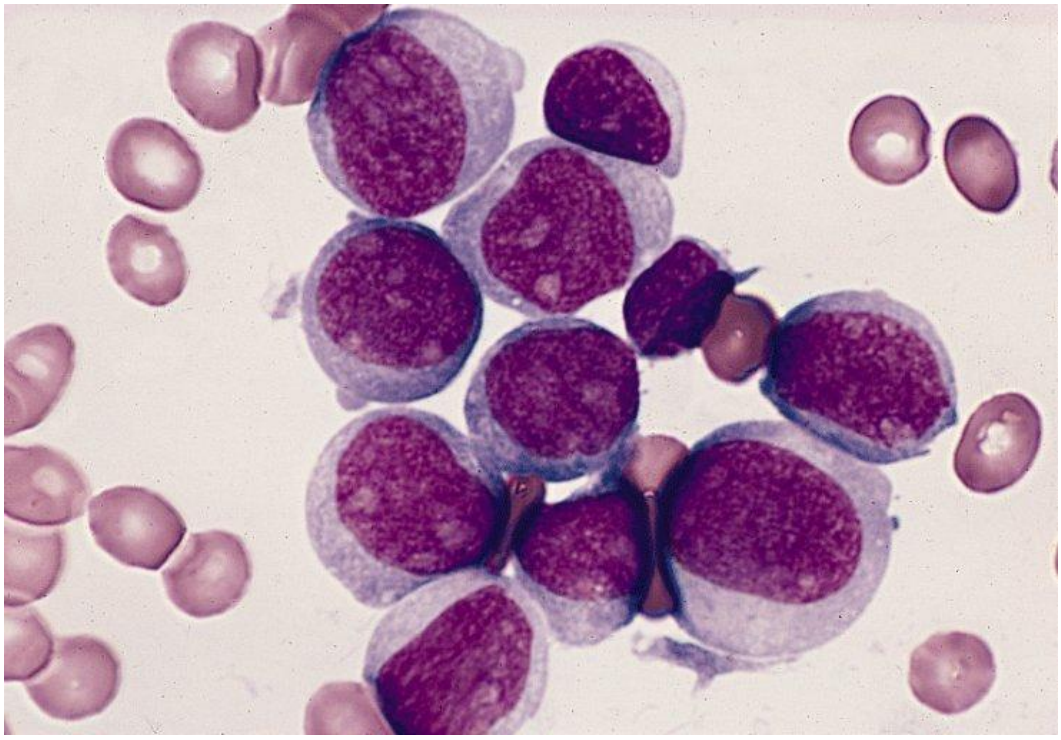

Figure 01: AML

Clinical Features

- Gum hypertrophy
- Violaceous skin deposits
- Fatigue and breathlessness
- Infections
- Bleeding and bruising
- Hepatosplenomegaly
- Lymphadenopathy

Investigations

- Blood Count – Platelets and hemoglobin are usually low; White blood cell count is normally raised.
- Blood Film – Lineage of the disease can be identified by observing the blast cells. Auer rods can be seen in AML.
- Bone marrow aspiration – Reduced erythropoiesis, reduced megakaryocytes, and increased cellularity are the indicators to look for.
- Chest X-ray
- Cerebrospinal fluid examination
- Coagulation profile

Management

Untreated acute leukemia is usually fatal. But with palliative treatment, the lifespan can be extended. Curative treatments can sometimes be successful. Failure can be due to relapse of the disease or due to complications of the therapy or because of the nonresponsive nature of the disease. Chemotherapy is the mainstay in the management of AML.

What is ALL?

Acute Lymphocytic leukemia (ALL) is a malignancy whose hallmark feature is the abnormally high number of lymphocytes or lymphoblasts in the bone marrow and peripheral blood.

Clinical Features

- Breathlessness and fatigue
- Bleeding and bruising
- Infections
- Headache/confusion
- Bone pain
- Hepatosplenomegaly
- Lymphadenopathy
- Testicular enlargement

ALL is the commonest cancer in the pediatric age group and if diagnosed during the early stages complete cure is possible. But ALL in adults has a poor prognosis.

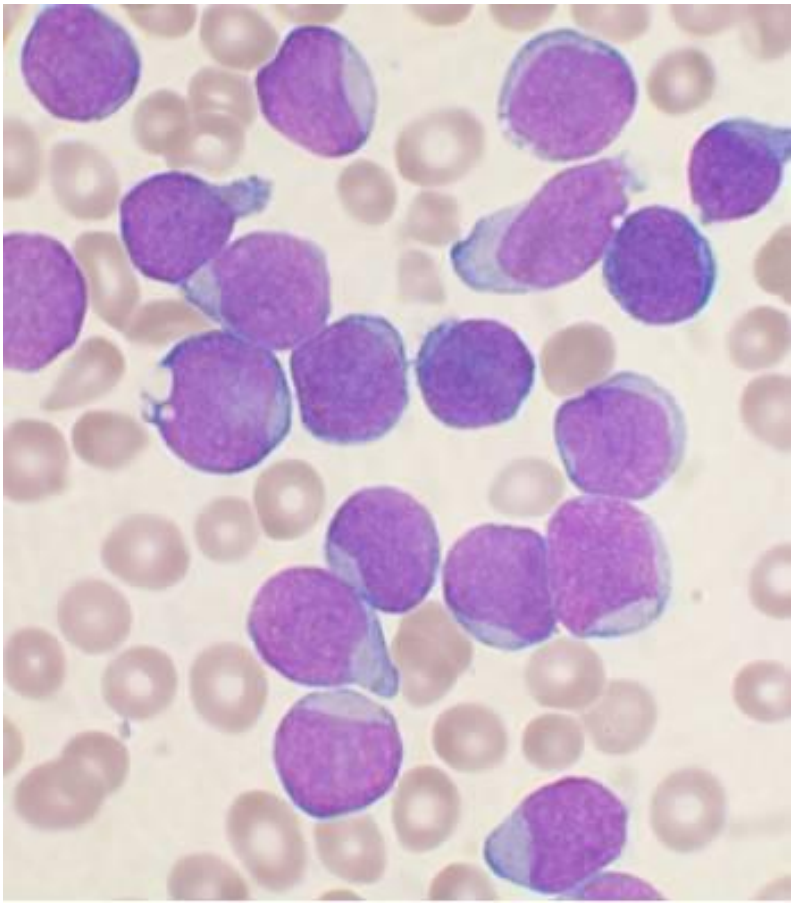

Figure 02: ALL

Investigations

- Blood Count – Platelets and hemoglobin are usually low; White blood cell count is normally raised.
- Blood Film – Lineage of the disease can be identified by observing the blast cells. Bone marrow aspiration-Reduced erythropoiesis, reduced megakaryocytes, and increased cellularity are the indicators to look for.
- Chest X-ray
- Cerebrospinal fluid examination

Management

The ALL is also treated with chemotherapy.

What are the Similarities Between AML and ALL?

- Both conditions are malignancies of the blood cells.

- The same set of investigations is done for the diagnosis of both AML and ALL.
- Chemotherapy is the mainstay in the management of AML and ALL.

What is the Difference Between AML and ALL?

AML vs ALL	
Acute myeloid leukemia or AML is a malignancy that is characterized by the abnormal proliferation of the immature white blood cells called myeloblasts.	Acute Lymphocytic leukemia (ALL) is a malignancy whose characteristic feature is the abnormally high number of lymphocytes or lymphoblasts in the bone marrow and peripheral blood.
Characteristics Features	
There is an abnormally high number of myeloblasts.	It is the number of lymphoblasts that is abnormally increased.
Clinical Features	
Clinical features of AML; · Gum hypertrophy · Violaceous skin deposits · Fatigue and breathlessness · Infections · Bleeding and bruising · Hepatosplenomegaly · Lymphadenopathy	Clinical features of ALL; · Breathlessness and fatigue · Bleeding and bruising · Infections · Headache/confusion · Bone pain · Hepatosplenomegaly · lymphadenopathy

- Testicular enlargement

Summary – AML vs ALL

Acute myeloid leukemia or AML is a malignancy that is characterized by the abnormal proliferation of the immature white blood cells called myeloblasts whereas Acute Lymphocytic leukemia (ALL) is a malignancy whose characteristic feature is the abnormally high number of lymphocytes or lymphoblasts in the bone marrow and peripheral blood. Thus, the main difference between AML and ALL is that in AML the myeloblasts number is abnormally increased, but in ALL it is the lymphoblast that number that is pathologically elevated.

References:

1. Kumar, Parveen J., and Michael L. Clark. Kumar & Clark clinical medicine. Edinburgh: W.B. Saunders, 2009. Print.

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