**Ministry of Higher Education And Scientific Research Al-Mustaqbal University College**

**Department of Medical laboratory techniques**

# Leukemia

**Lec 15 3ed stage hematology**

**Definition**

Definition It is a group of malignant disorder, affecting the blood and blood –forming-

.tissue of the bone marrow lymph system and spleen

The word Leukemia comes from the Greek leukos which means "white" and aima- "which means "blood

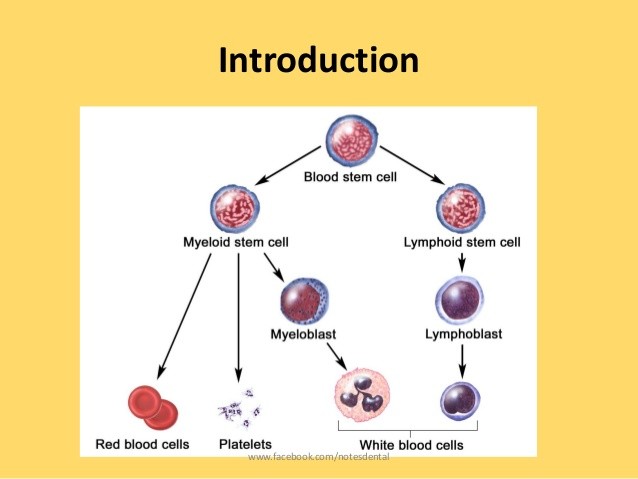
**Acute leukemia** consist of predominantly immature, poorly differentiated 1 cells (usually blast forms). Acute leukemia are divided into

(Acute Lymphocytic Leukemia (ALL- (Acute Myelogenous Leukemia (AML-

.**Chronic leukemia** have more mature cells than acute leukemia-2

They usually manifest as abnormal leukocytosis and mostly asymptomatic person. Chronic leukemia are divided into

Chronic lymphocytic leukemia –CLL- Chronic myelogenous leukemia-CML-



#### Acute Myeloblastic Leukemia

Stem cell disorder characterized by malignant neoplastic proliferation and accumulation of immature and nonfunctional hematopoietic cells in the BM

**Risk factors** Chemo/radiation -Exposure to benzene

**AML** is a malignant, clonal disease that involves proliferation of blasts in Bone marrow and Peripheral Blood

AML is: It is a blood cancer ,Failure to produce normal cells (Neutrophil etc) ,Highly heterogeneous ,Mostly in adult with a median age of onset of 50 yr , Belong to myeloid group cancer mainly Neutrophils There is no enough Neutrophils for killing bacteria

AML is based on Cellular differentiation

(?What type of cell )

(granulocyte, monocyte , erythroid, or megakaryocytic) Classified as

M0 Minimally differentiated-1

.M1 Myeloblastic 2-M2 Myeloblastic with differentiation-2 M3 Promyelocytic -3

M4 Myelomonocytic-4 M5 Monoblastic -5

M6 Erythroleukemia -6

M7 Megakaryocytic -7

### Pathophysiology

Uncontrolled growth of blasts in marrow leads to Stop normal cells production .

.Appearance of blasts in peripheral blood

.(Accumulation of blasts in other sites (Kidney , Liver, spleen

.Function disorders of many organs

#### (Patient`s Symptoms (Clinical Features of AML

(Anemia (weakness, fatigue, dyspnea on exertion (thrombocytopenia ,Bleeding (mucosal bleeding, purpura (Leukopenia -Infection (neutropenia

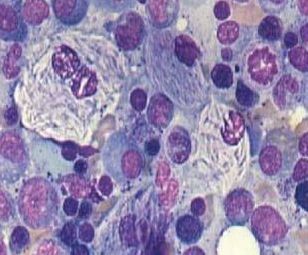
## Lab Features: Peripheral blood Lab

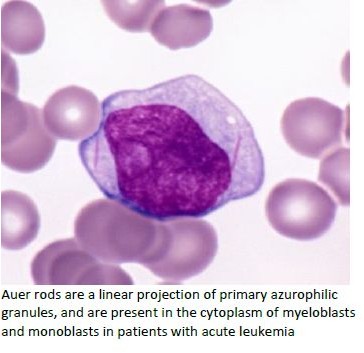
WBC count: 20% blasts present -1

Auer rods: fused primary granules in myeloblasts

RBCs Decreased - Hgb < 10g/dL Inclusions reflect rbc maturation-2 Platelets Decreased Megakaryocyte fragments -3

Bone marrow aspirate-and biopsy >20% blasts in BM myeloblast is the predominant cell-4



**Bone marrow aspirate-and biopsy**

##### (Acute lymphoblastic leukemia (ALL

Acute lymphoblastic leukemia (ALL) is a malignant (clonal) disease- of the bone marrow in which early lymphoid precursors proliferate

.and replace the normal hematopoietic cells of the marrow

ALL is the most common type of cancer and leukemia in children-

##### Classification

(B-cell precursors (80 to 85% of cases

.(T-cell precursors (15 to 20% of cases

### (Acute lymphoblastic leukemia (ALL

(a blood cancer , It is a failure to produce normal cells (Lymphocytes Incidence about 85% of childhood leukemia

Belong to Lymphoid group cancer

There is no enough Lymphocytes to kill viruses, fungus and produce antibodies

**Laboratory findings**

WBC 1. Normal count 2. Lower count 3. Higher count-1 Blood smear study RBC: Normocytic anemia-2

PLTs: Low count , WBC: lmphoblast 90% = Normal other cells 10%

:Bone marrow biopsy and aspirate-3

Must presence of 30% cells are blast ,abnormal white blood cells

