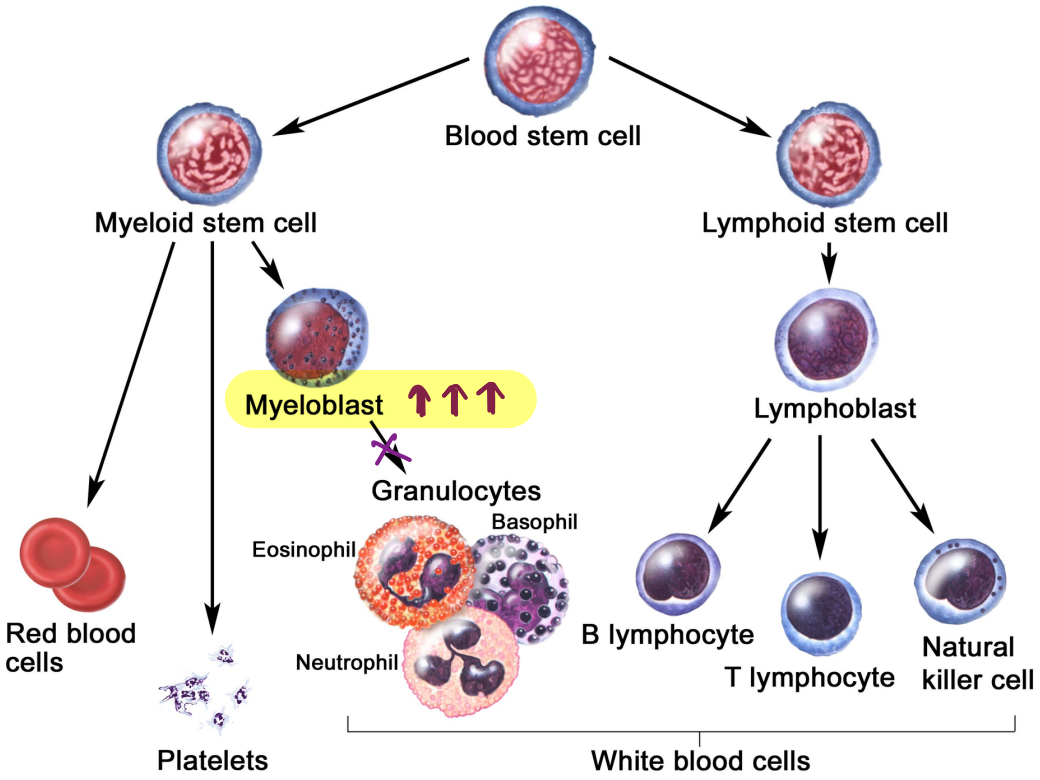
Acute Myeloid Leukemia



- Neoplastic accumulation of Immature Myeloid cells (>20%) in the bone marrow.
- Myeloblasts are usually characterised by Positive cytoplasmic staining for MPO.
- 5 year survival rate = 25%.

Causes:

(i) Chemoradiation - DNA Mutation

(ii) Idiopathic - 25-50% cases

(iii) Genetic Diseases - (a) Down Syndrome

(b) AML Subtype (APL)

t(15:17) → PML-RARA gene

(c) t(8:21) - Myeloid Sarcoma

(d) t(16:16)

(iv) Bone marrow disorder - (a) Fanconi Anemia
(b) Diamond black fann Syndrome

(v) Exposure to Anticancer drugs

(vi) FLT3-ITD Activation mutation

Effect in Bone marrow:

(i) ↑ Myeloblast → ↓↓ WBC (functional) → Infection.

(ii) ↓ RBC → Anemia (Pallor, Dysponea)
↓ Platelets → Thrombocytopenia (Bruising, Bleeding)

(iii) ↑ Myeloblasts → Bone marrow expansion → Bone pain.

Clinical Features:

(i) Anemia, Wt loss, Fatigue

(ii) Fever

(iii) Thrombocytopenia - Petechiae, Epistaxis, Purpura

(iv) Lymphadenopathy

(v) Hepatosplenomegaly.

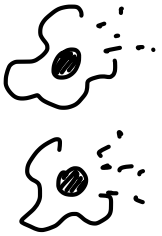
(vi) Blood Vessel blocked due to Very high Myeloblast.

Brain - TIA, Stroke

Lungs - Resp. Distress

Eyes - Vision Loss

(vii) Tumor lysis syndrome.



PO_4^{3-} ↑

K^+ ↑

Uric Acid ↑

→ Acute Kidney Injury

Tx = (1) IV Fluid
(2) Allopurinol
(3) Rasburicase.

(viii) Skin = Leukemia Cutis

(ix) Gingiva = Gingival hyperplasia.

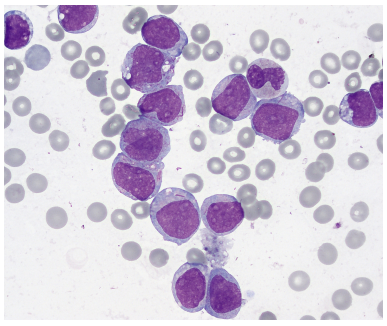
(x) DIC (only in APC subtype)

↓

↑ Fibrinolysis
↓ Clotting factor
] - High Bleeding Risk

Involve - Lung, Brain, Priapism, Blindness.

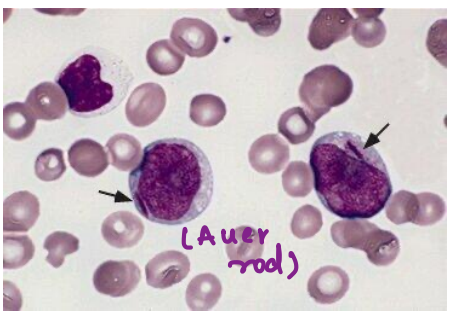
Diagnostic Approach :



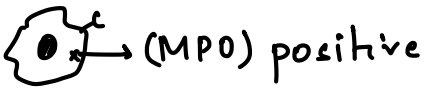
(i) CBC with PBS : (a) Hb ↓
(b) RBC ↓
(c) Platelets ↓
(d) TLC can be Normal / ↓ / ↑
(e) PBS =  ↑ Myeloblasts.

(ii) Bone marrow biopsy : (Definitive diagnosis)

- Myeloblasts > 20%
- Auer rods in Myeloblast



(iii) Immunophenotyping :



. Flow cytometry = CD13 , CD117

(iv) Molecular Study : FLT3
CEBPA
NPM1

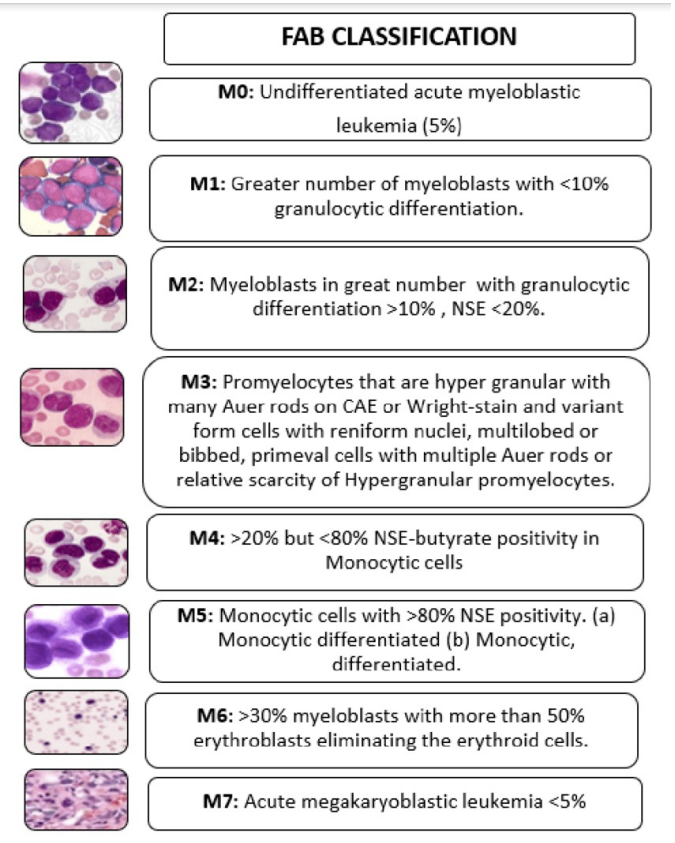
(v) Chest X Ray

(vi) HLA typing

(vii) Baseline KFT : Tumor lysis Syndrome
↳ Uric Acid ↑
PO4 ↑
K^+ ↑
Ca ↓

FAB Classification :

FAB subtype	Name
M0	Undifferentiated acute myeloblastic leukemia
M1	Acute myeloblastic leukemia with minimal maturation
M2	Acute myeloblastic leukemia with maturation
M3	Acute promyelocytic leukemia (APL)
M4	Acute myelomonocytic leukemia
M4 eos	Acute myelomonocytic leukemia with eosinophilia
M5	Acute monocytic leukemia (MPO⊖)
M6	Acute erythroid leukemia
M7	Acute megakaryoblastic leukemia (MPO⊖)



Treatment:

- **Chemotherapy (Non AML Subtype):**

  Induction → Consolidation → Maintenance

  (a) Cytarabine + Anthracyclines

  (b) Daunorubicin

- **For APL Subtype – AML:**

  Goal: Promote Differentiation

  (Myeloblast → Promyelocyte → Granulocytes)

  (a) ATRA (All-trans-Retinoic acid)

  (b) ± Arsenic

- **Bone Marrow Transplant:** • For Poor prognostic AML
  • Failed Chemotherapy AML