ACUTE LYMPHOBLASTIC LEUKEMIA ALL

ACUTE LYMPHOBLASTIC LEUKEMIA (ALL)

- Clonal proliferation and accumulation of blast cells in blood, bone marrow and other organs
- Disorder originates in single B or T lymphocyte progenitor
- Heterogenous disease with different biological subtypes
- Incidence in adults : 20% of acute leukemias
- Etiology - unknown

Acute leukemias - clinical features

1. Bleeding
2. Fever/infection
3. Bone/joint pain
4. Hepatomegaly
5. Splenomegaly
6. Lymphadenopathy
7. CNS involvement

Acute leukemias - laboratory findings (1)

Blood examination .1

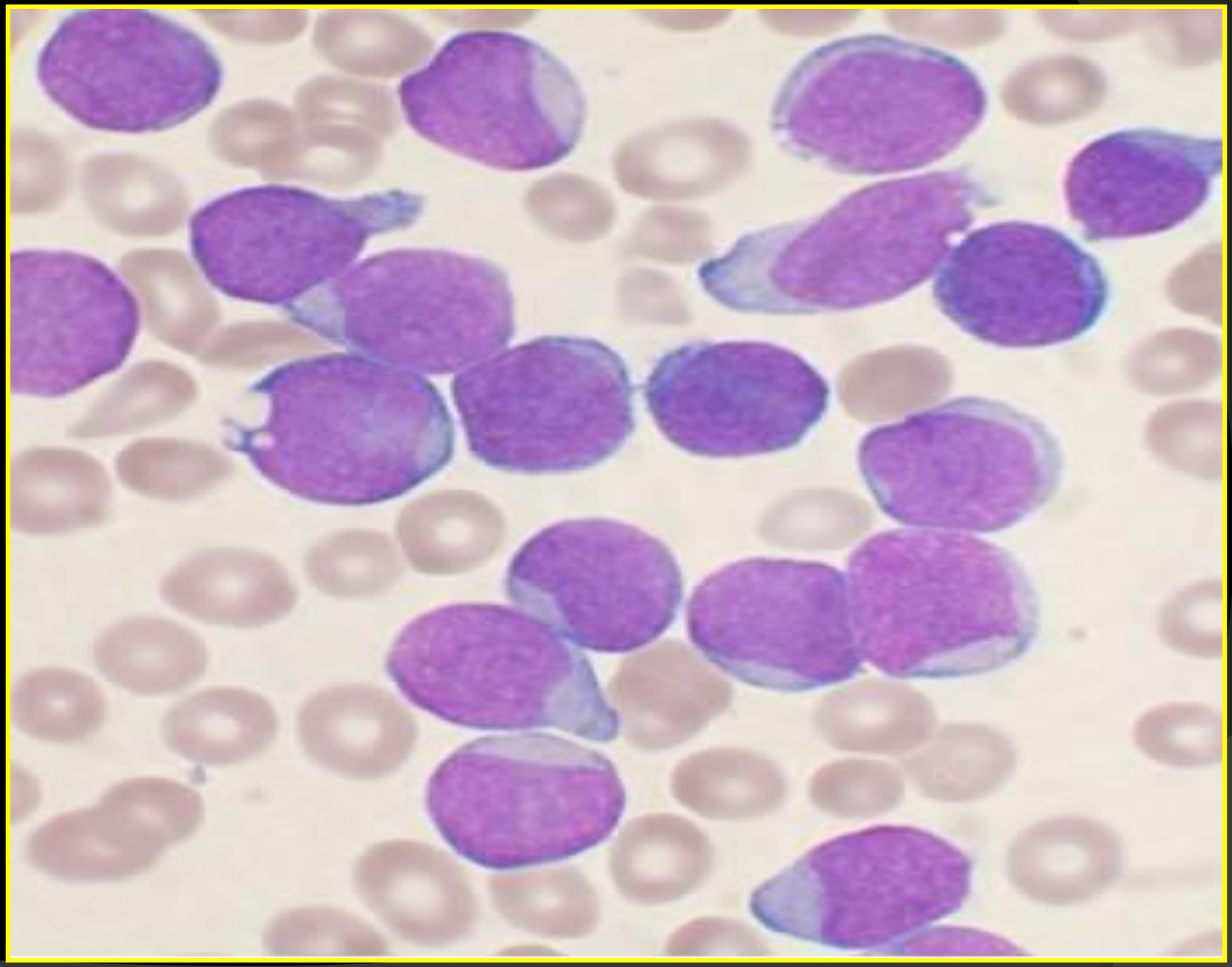
- anemia, -
- thrombocytopenia, -
- variable leukocyte count, usually - increased,
- cells blood morphology: presence of blast -

Bone marrow morphology .2

- presence of blast cells, -
- suppression of normal hematopoiesis -

Acute leukemias - Laboratory findings (2)

3. Cytochemical stains
4. Immunophenotyping
5. Cytogenetics
6. Molecular studies



Immunologic classification of acute lymphoblastic leukemias

B- lineage (80%)	Markers
Pro-B	CD19(+),Tdt(+),CD10(-),CyIg(-),
Common	CD19(+),Tdt(+),CD10(+),CyIg(-),
Pre-B	CD19(+),Tdt(+),CD10(+),CyIg(+),SmIg(-)
Mature-B	CD19(+),Tdt(+),CD10(±),CyIg(±),SmIg(+)

T-lineage (20%)	
Pre-T	CD7(+), CD2(-), Tdt(+),
Mature-T	CD7(+), CD2(+), Tdt(+),

Chromosomal/molecular abnormalities with prognostic significance in ALL

Better prognosis
- normal koryotype
- hyperdiploidy

Poor prognosis
- t (8; 14)
- t (4; 11)

Very poor prognosis
- t (9; 22); BCR/ABL (+)

Risk classification in ALL

1. Standard risk
2. High risk
3. Very high risk

High-risk ALL

1. Pre - T
2. Pro - B
3. Age > 35 years,
4. WBC > 30 G/L in B-ALL
   > 100 G/L in T-ALL
5. No remission after 4 weeks of induction
   therapy

VERY HIGH-RISK ALL

Philadelphia Chromosome
t(9;22)+ or BCR/ABL +

TREATMENT STRATEGY IN ALL

In ALL the choice of treatment-strategy depends :on

1. Risk qualification
2. Immunophenotype of leukemic cells
   - T lineage,
   - early B lineage,
   - mature B lineage,
3. Age and biological condition
4. Goal of treatment

Remission induction therapy in ALL

1. Antineoplastic treatment
   a.Drugs: prednisone, vincristine, asparginase, cyclophosphamide, 6MP
   daunorubicin/adriamycin/epirubicin,
   cytosine arabinoside,
   b.Treatment duration: 4-8 weeks
   c. No of courses: 1- 2
2. CNS prophylaxis
3. Supportive care
4. Treatment of complications

Post-remission therapy in standard-risk ALL

1. **Chemotherapy**
   - **a. Maintenance therapy: 6-mercaptopurine,**
     methotrexate - for 2-3 years.
   - **b. Intensification treatment periodically**
     repeated: daunorubicin/adriamycin,
     prednisone, vincristine, cyclophosphamide.
2. **CNS prophylaxis**

Post-remission therapy in very high-risk ALL

Allogeneic Stem Cell Transplantation

Treatment results in ALL

- **Adults**
  - Complete remission (CR) 80-85%
  - Leukemia-free survival (LFS) 30-40%
- **Children**
  - Complete remission (CR) 95-99%
  - Leukemia-free survival (LFS) 70-80%

AlloHSCT in ALL

- **Sibling donor**

	CR1	>CR2	relapse/refractory
LFS	51% (21-80)	34% (13-42)	20% (12-33)
RR	26% (9-50)	47% (40-69)	71% (59-76)
TRM	29% (12-42)		

- **Matched unrelated donor**

LFS	39% (38-42)
RR	22% (19-23)
TRM	48%

THE END