Leukemia and Lymphoma Dental Views

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Hematological Malignancies

Malignant transformation is now known to be associated with changes in the function of various cellular gene called oncogenes. These genes code for proteins which are normally involved in cell proliferation and differentiation.

Malignant cells replace the normal cells e.g. in the bone marrow by a clonal population of malignant cell arising from a single cells with an acquired genetic alteration (somatic mutation).

Possible mechanisms of oncogenesis chemicals, radiation, drugs…

Leukemia's

A group of disorders characterized by accumulation of abnormal white cells in the bone marrow. These abnormal cells cause bone marrow failure and raised circulating WBC & infiltrate organ.

25,000 – 30,000 cases per year in USA

50% are acute

High mortality without RX

Classification of Leukemia

- Acute leukemia
- Chronic leukemia

Etiology

- Hereditary
- Ionizing irradiation
- Chemicals
- Drugs
- Viruses
- Immune systems
- Chronic bone marrow dysfunction

Acute Leukemia's

- Acute Lymphoid Leukemia (ALL)
- Acute Myeloid Leukemia (AML)

Immature Cell (Blast) Infiltration

Acute Lymphoid Leukemia (ALL)

Common in children (3 – 10) years

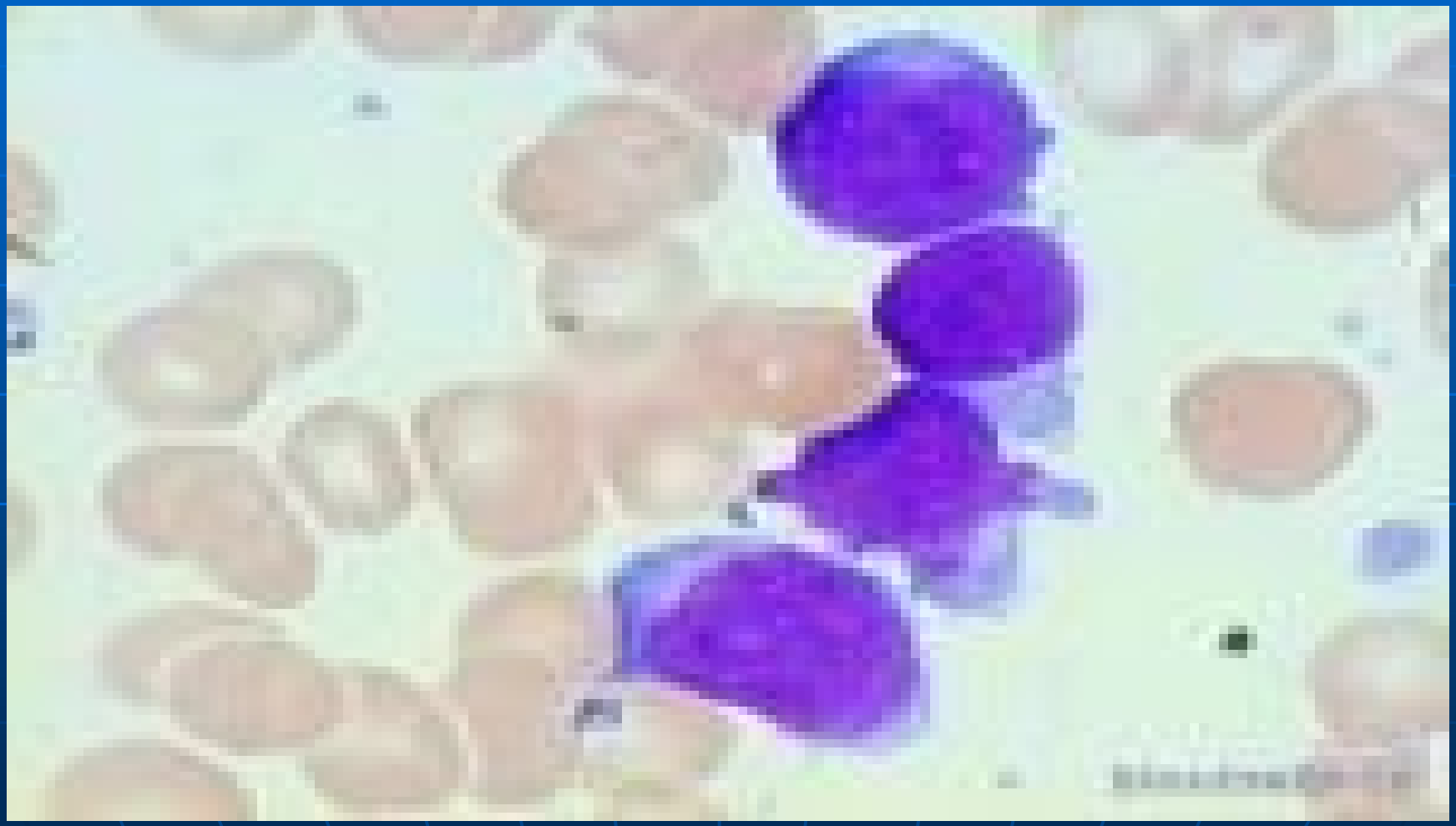
Cure rate in children is 85%

Cure rate in adults are 30%

Classifications

- Pre-B-ALL
- B-ALL (Burkitt)
- T-ALL

ALL



Acute Myeloid Leukemia (AML)

80% in adults

20% in children

M0 totally undifferentiated

M1 with no differentiation

M2 with some differentiation

→ M3 acute promyelocytic(DIC)

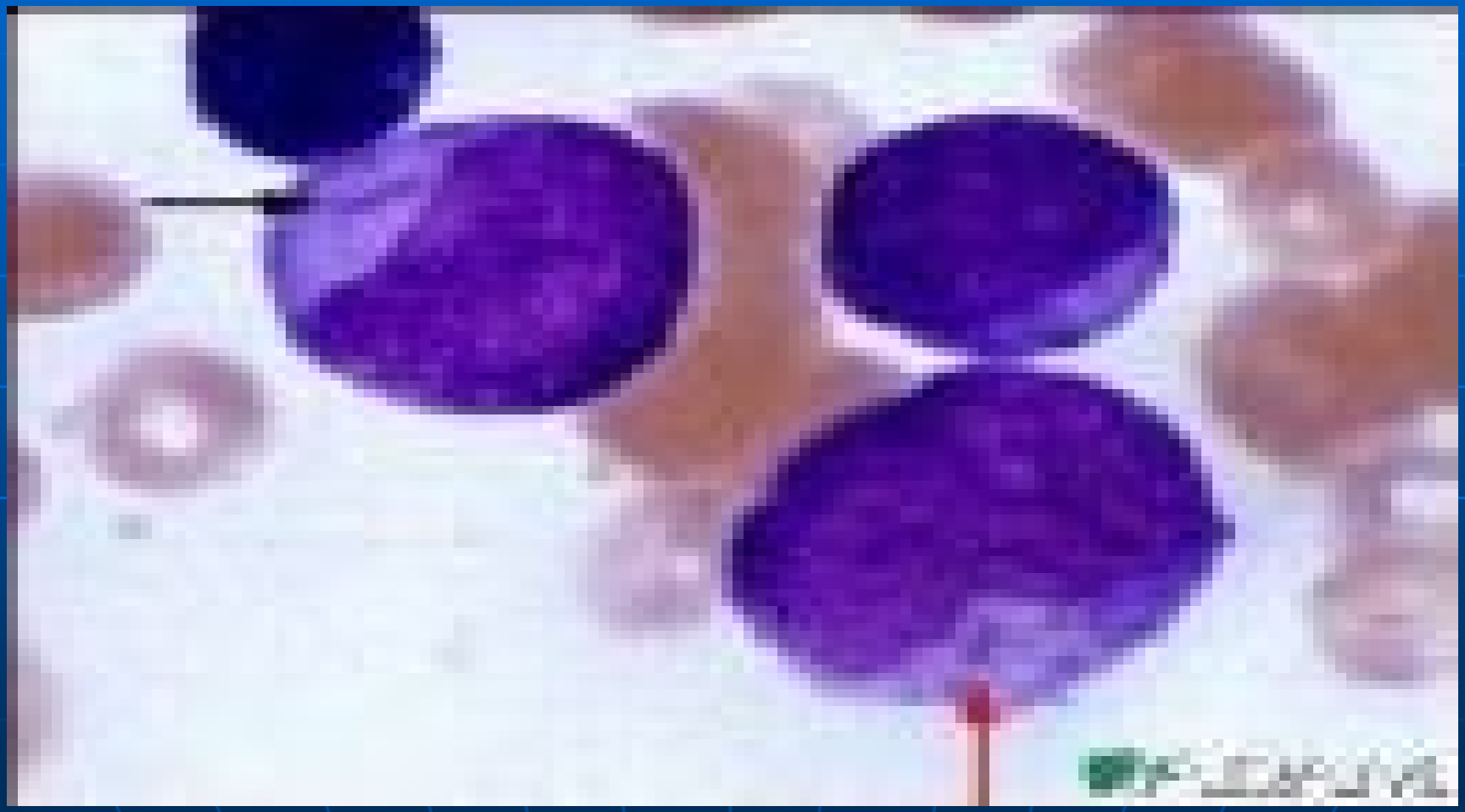
M4 myelomonocytic leukemia

M5 monocytic leukemia

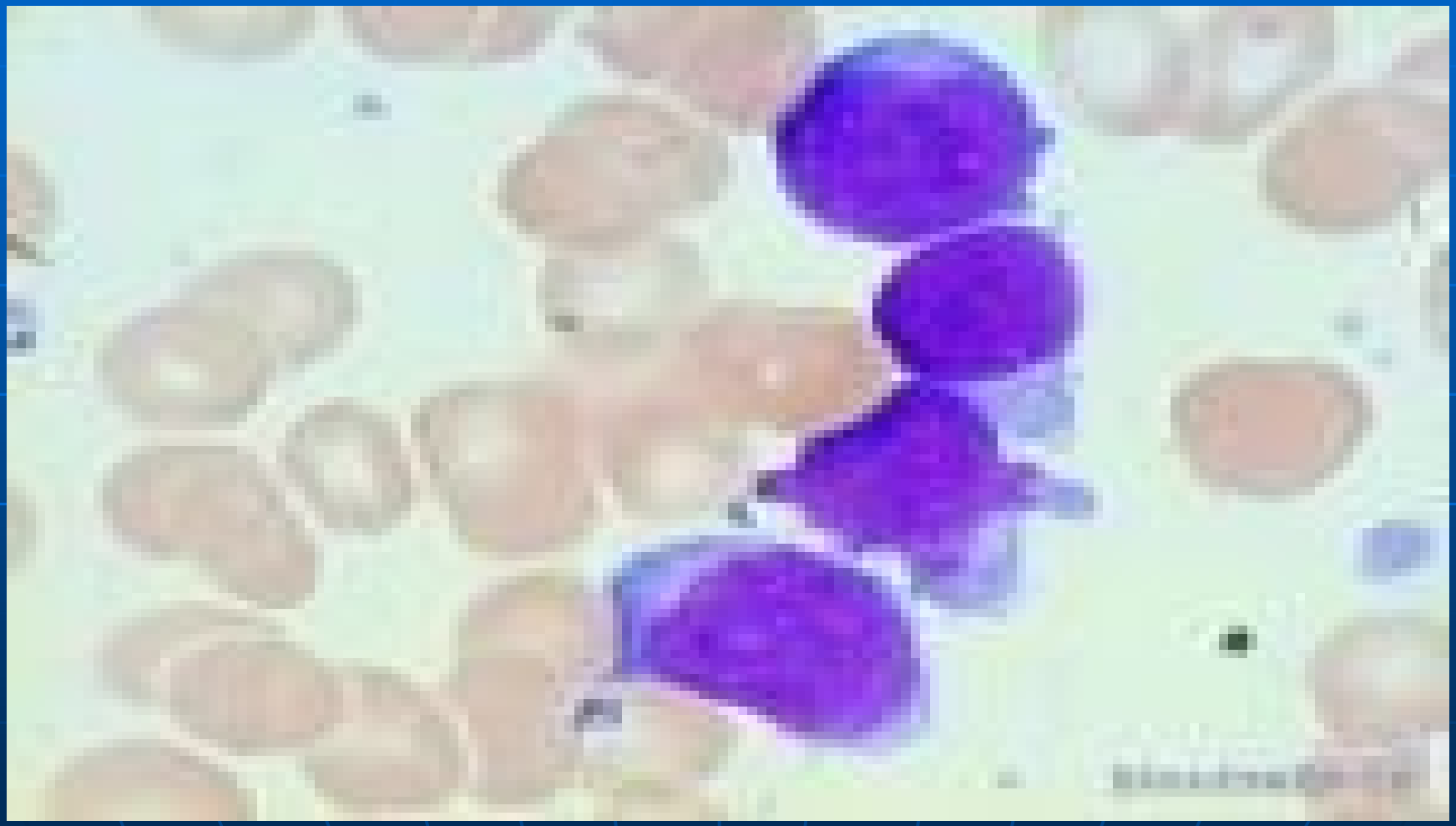
M6 erythroleukemia

M7 megakaryoblastic leukemia

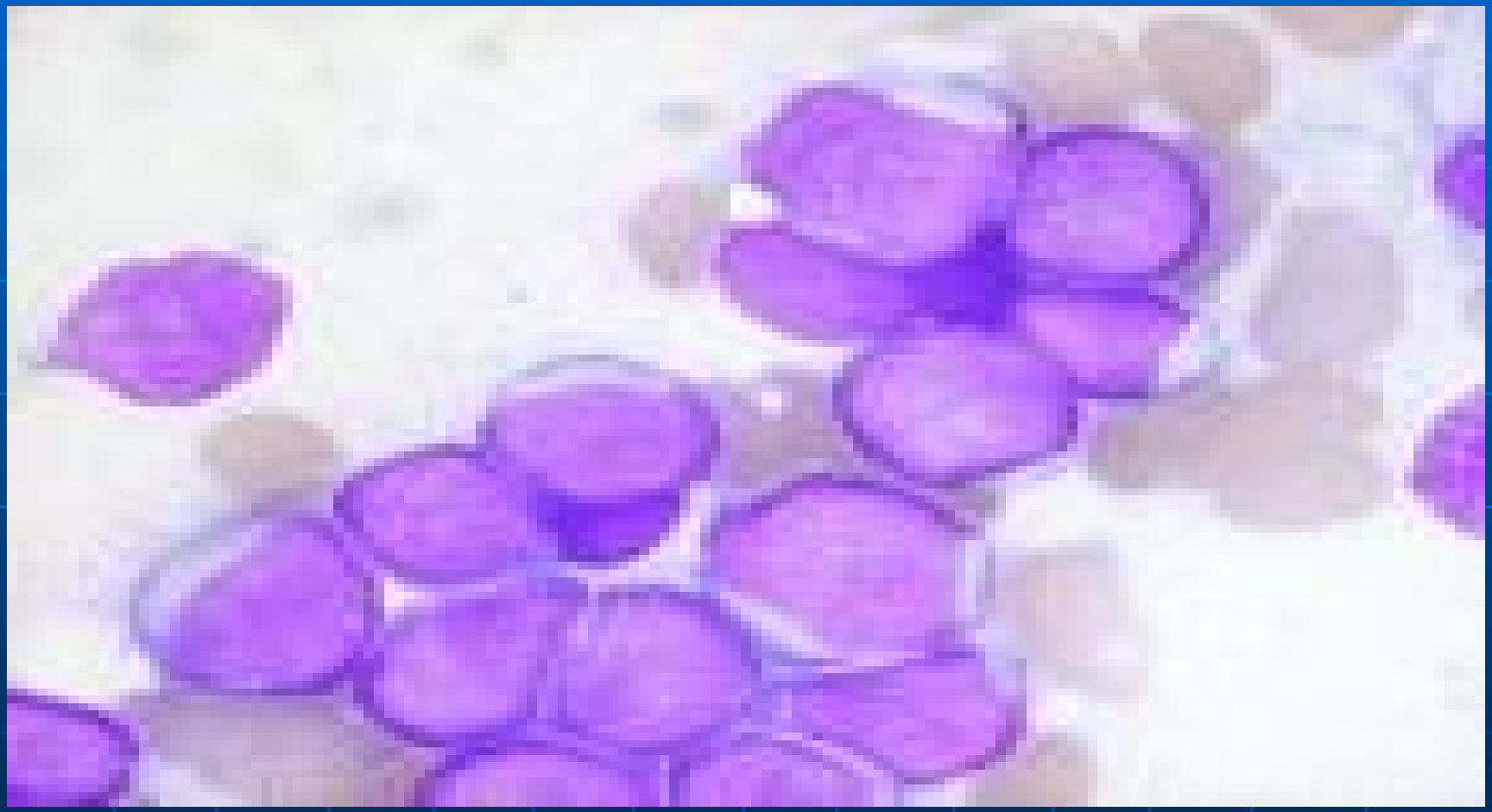
AML



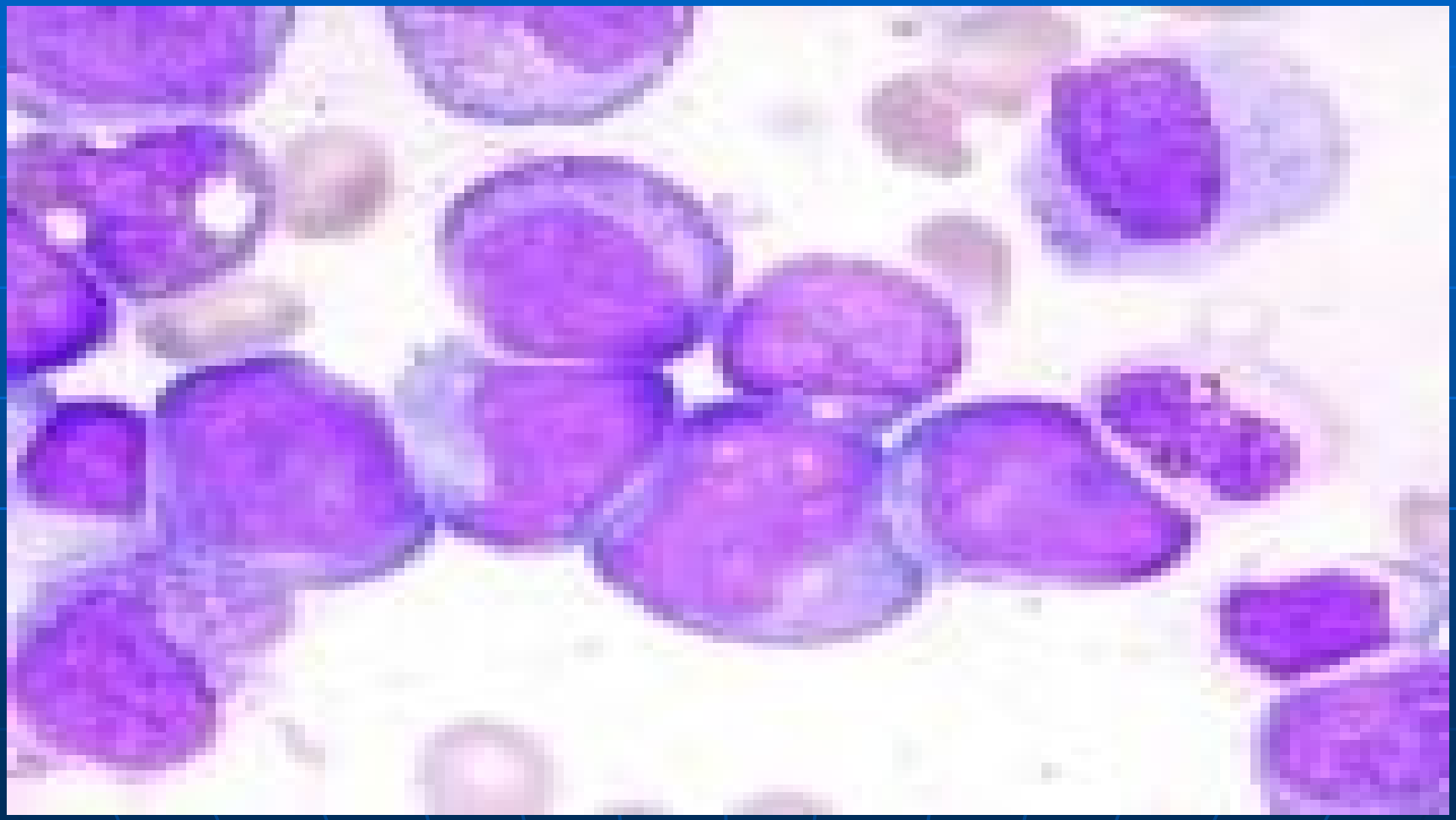
AML – mo



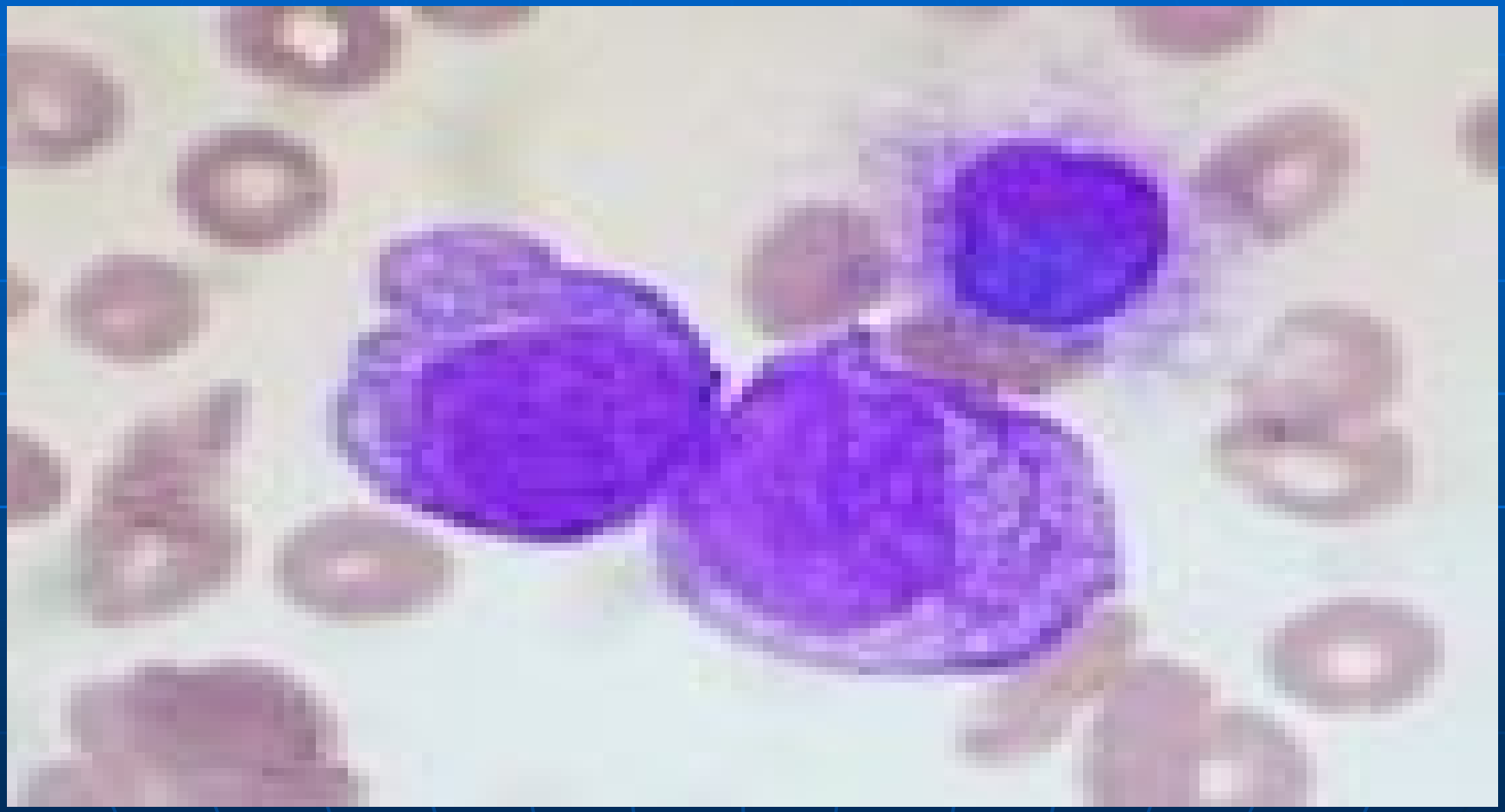
AML - M1



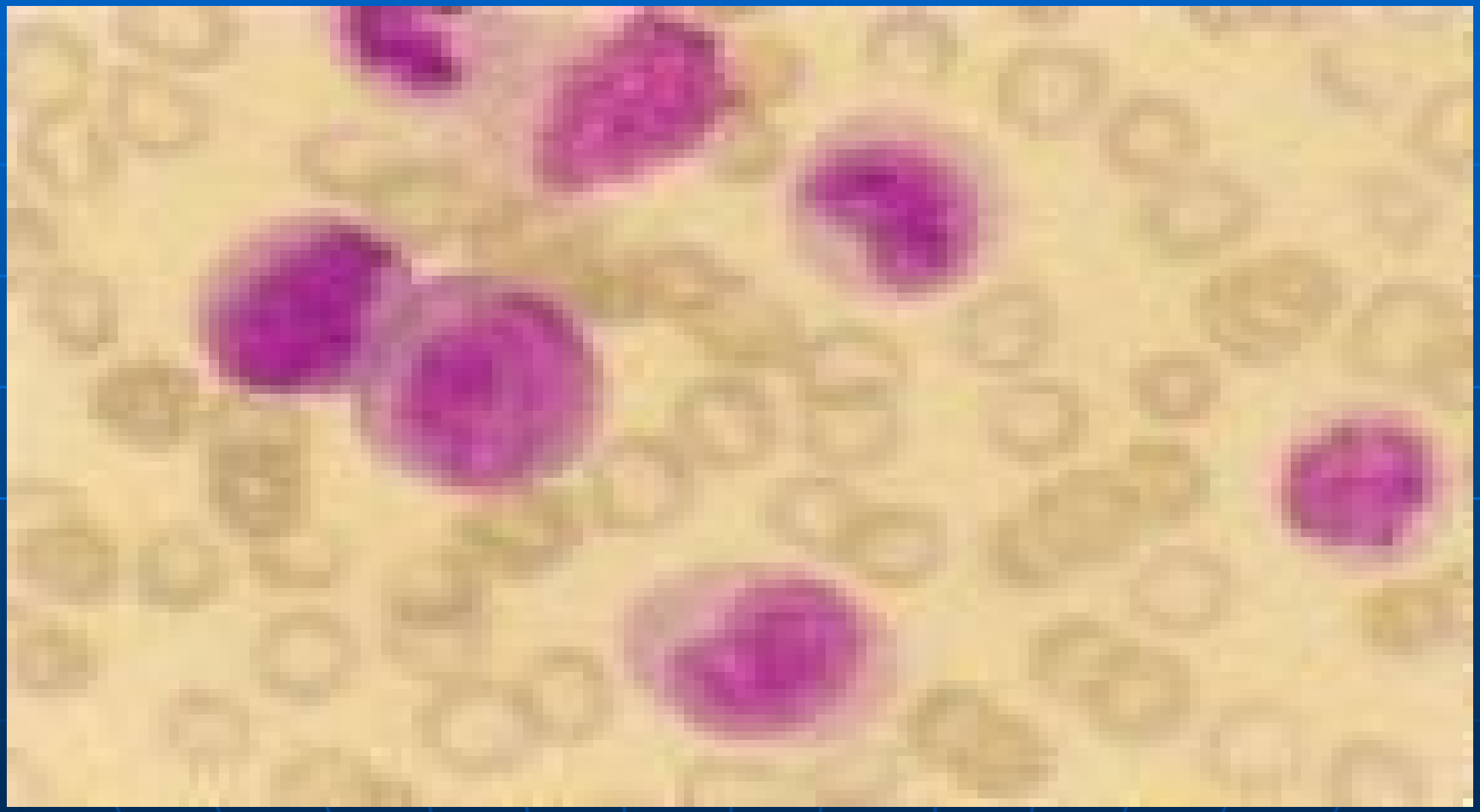
AML _ M2



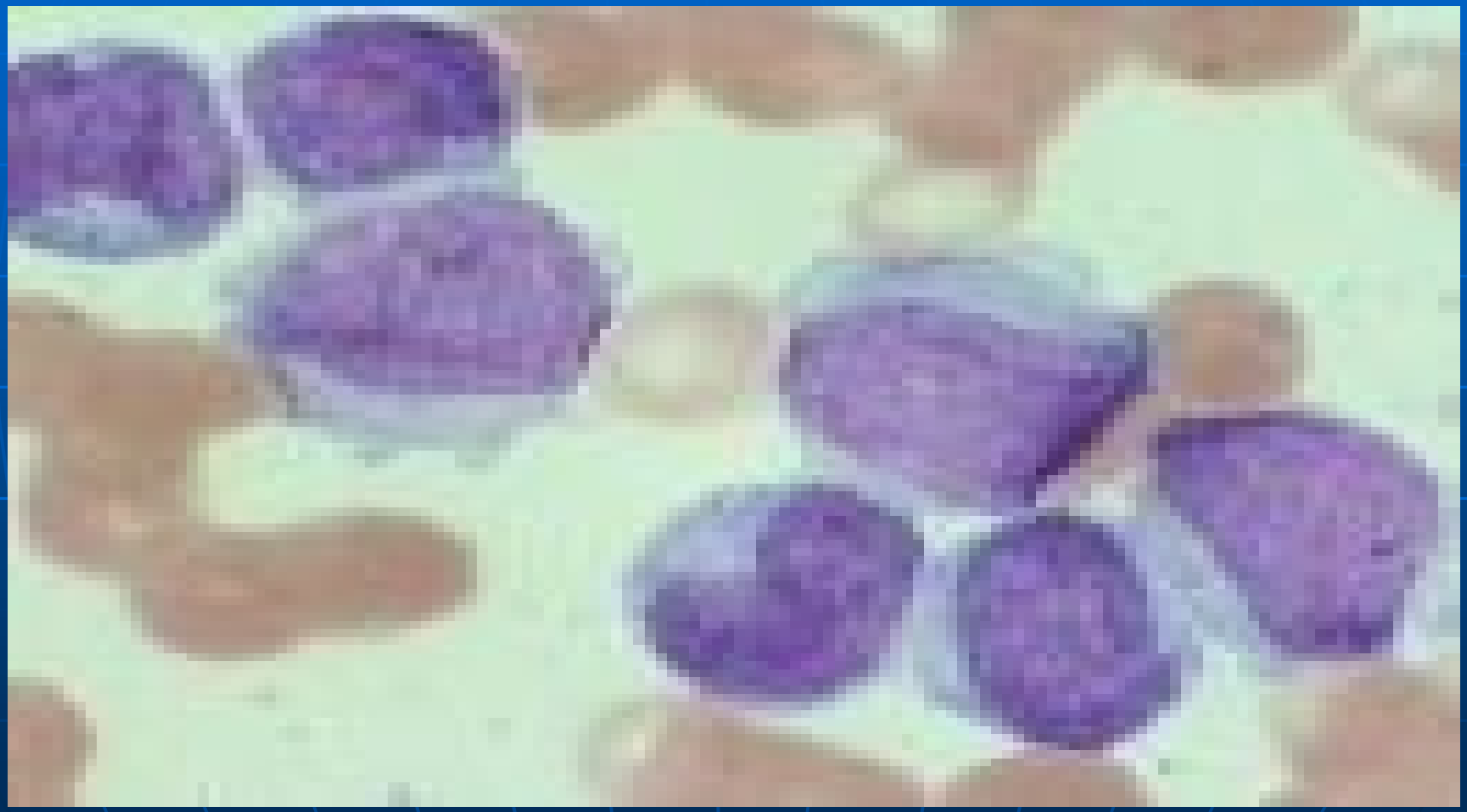
AML _ M3



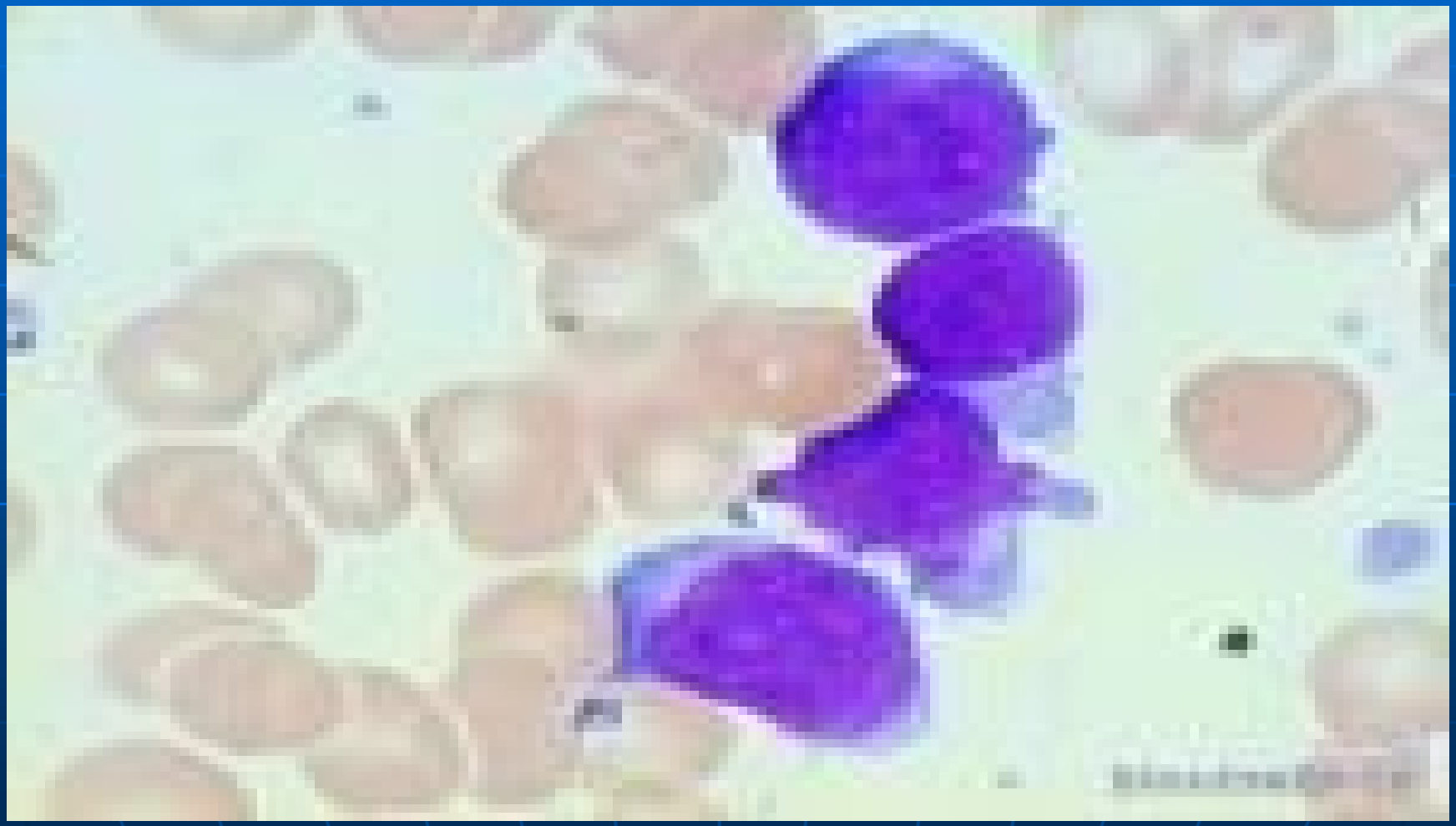
AML _ M4



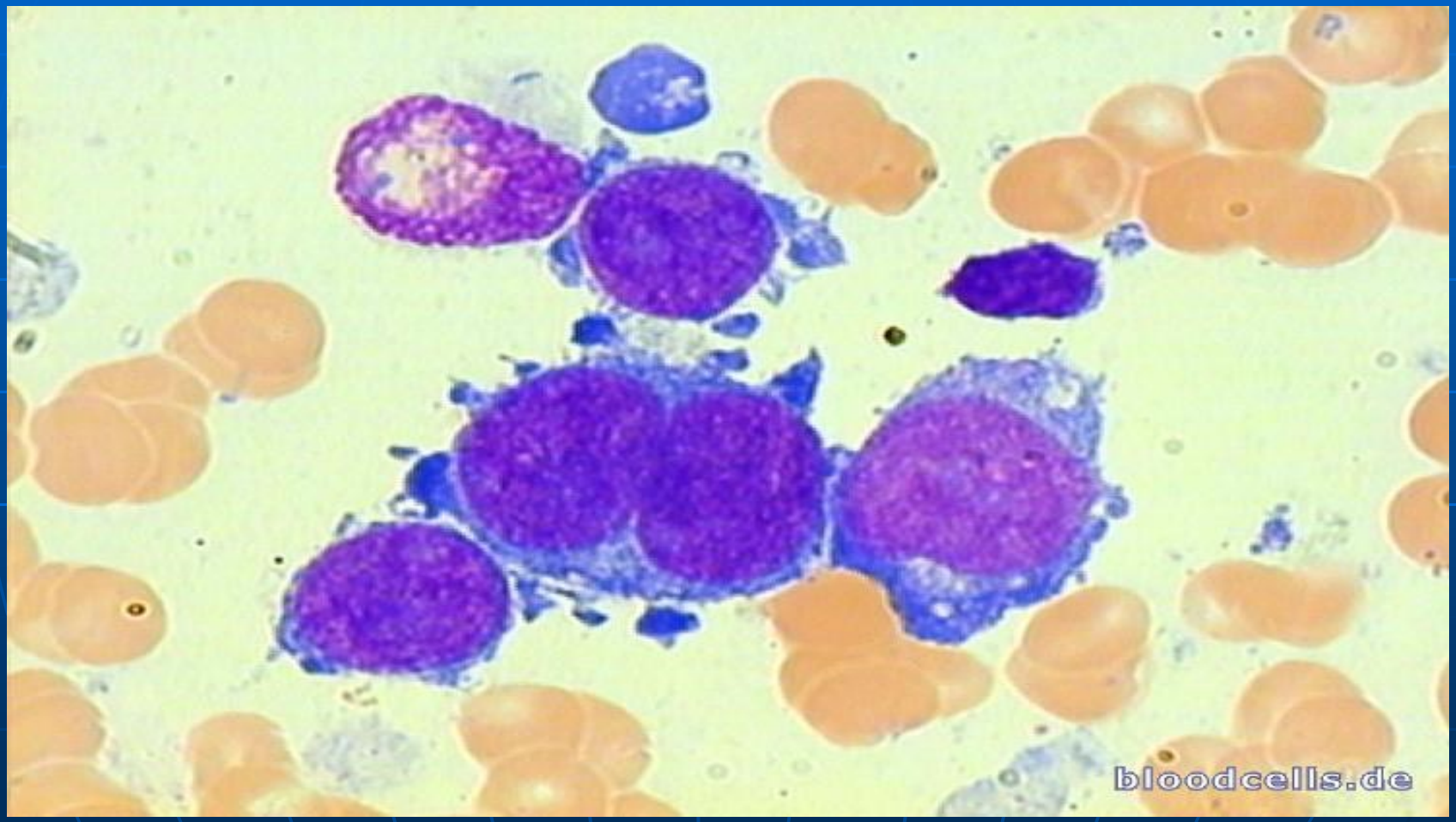
AML _ M5



AML – M6



AML – M7



Symptoms

- Weakness and fatigue
- Lymphadenopathy
- Fever
- Weight loss
- Recurrent infection
- Bleeding

Signs

Pallor

Echymosis

Lymphadenopathy

Oral bleeding

Oral lesions

Loose teeth

Diagnosis

* Laboratory Findings:

- CBC: WBC, Diff., Hb, Plt.
- Blood Film: Blast
- Bone marrow study
  - Bone marrow aspiration
  - Immunological marker
  - Cytogenetic
- Electrolytes & kidneys, liver function tests
- Radiological studies
- CNS examination ±

Chronic Leukemia

- Chronic Myeloid Leukemia (CML)
- Chronic Lymphocytic Leukemia (CLL)
  - B-CLL majority
  - T-CLL uncommon

Chronic Leukemia

- Chronic Myeloid Leukemia (CML)
- Chronic Lymphocytic (CLL)

B-Cell	T-Cell
B-CLL	T-CLL
B-PLL	T-PLL
Hairy Cell Leukemia (HCL)	Sezary Leukemia
Plasma Cell Leukemia	Adult T-Cell Leukemia
(rare)	Lymphoma

Chronic leukemia VS acute leukemia

Affects older age group

slower , insidious onset of symptoms

More functional mature WBC,s

Mild anemia and mild thrombocytopenia

Chronic Lymphocytic Leukemia

CLL accounts for 25% of the leukemia's in Elderly

Male predominance.

The accumulation of the large numbers of apparently mature lymphocytes to 50-100 times the normal lymphoid mass in blood, bone marrow, spleen & liver.

Clinical Findings:

.Is often discovered accidentally

Lymphadenopathy during an examination of unrelated Findings

Hepatosplenomegaly

Rarely fever , night sweat , weight loss

CBC ,leukocytosis

95% mature appearing lymphocytes

.2. BM Diffuse infiltration with small lymphocytes. Erythroid, myeloid are reduced. If an autoimmune hemolytic anemia develops, erythroid elements prominent.

Prognosis

Usually very good

Range from 5 – 10 years

Malignant Lymphomas

- Hodgkin's disease
- Non-Hodgkin's Lymphomas

There is replacement of normal lymphoid structure by collections of abnormal cells.

Hodgkin's Disease HD

HD is a malignant tumor

If the disease is localized to a single peripheral lymph node region, it is subsequently progress by contiguity within lymphatic system.

HD being characterized by the presence of Reed Sternberg (RS) cells (neoplastic) and associated with inflammatory cells.

EBV genome has been detected approximately 20-50%.

- The origin of the malignant cell (RS) was not firmly established except recently
- RS cells express features of cellular activation

Clinical Features

- It has bimodal age incidence
  - in young adult (age 20-30 years)
  - after the age of 50

- Male: Female – 2:1
- Most patients present with painless non-tender, asymmetrical rubbery enlargement of a superficial LNs
  - inguinal node 6-12%
  - mediastinal mass 6-11% (NS)
  - cervical node 60-70%
  - axilliary node 10-15%

Splenomegaly in 50% of patients
  - fever
  - sweating
  - weight of loss pruritus

Haematological Findings

No anemia or normocytic anemia

2. One-third have a leucocytosis

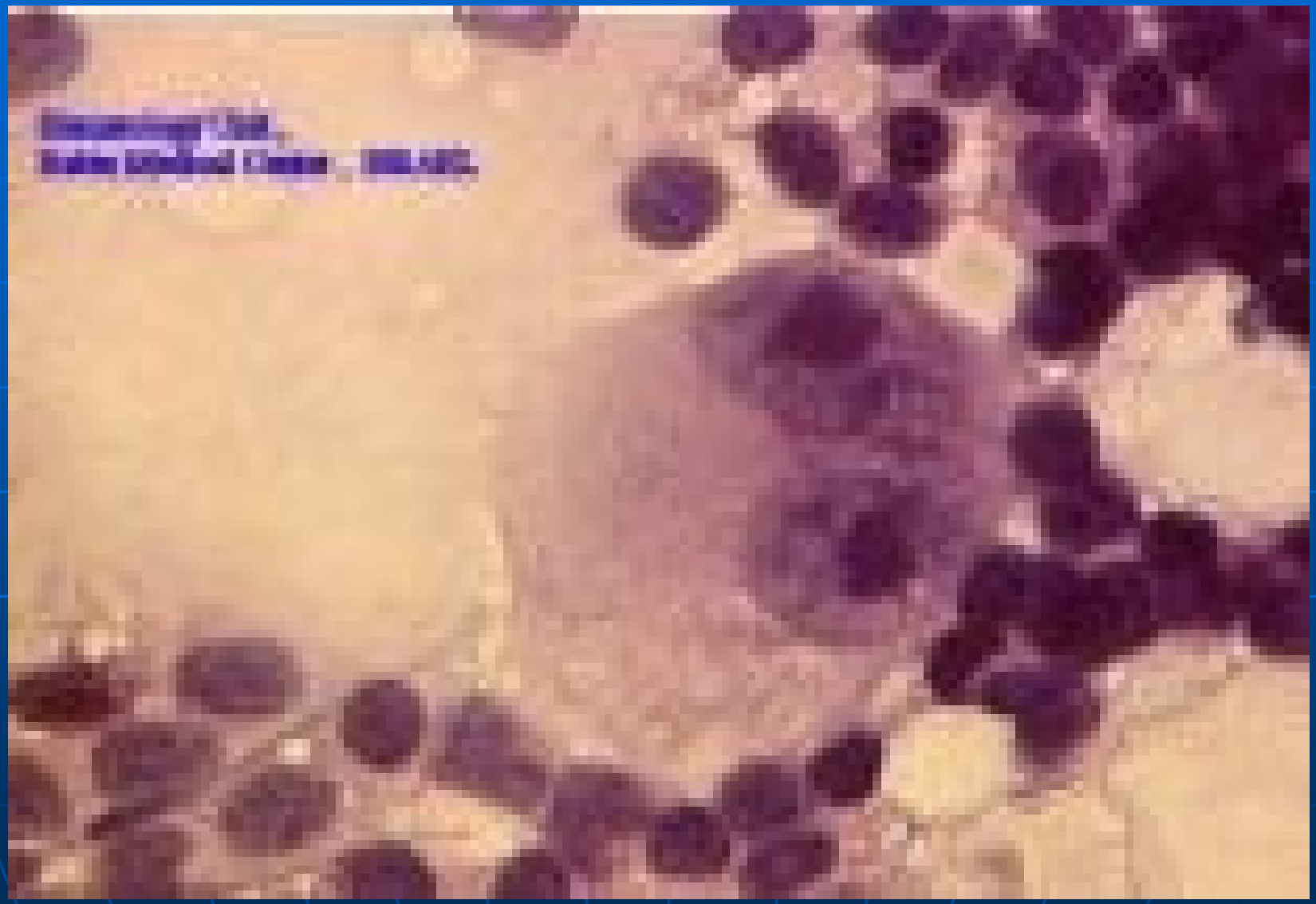
3. Eosinophilia is frequent

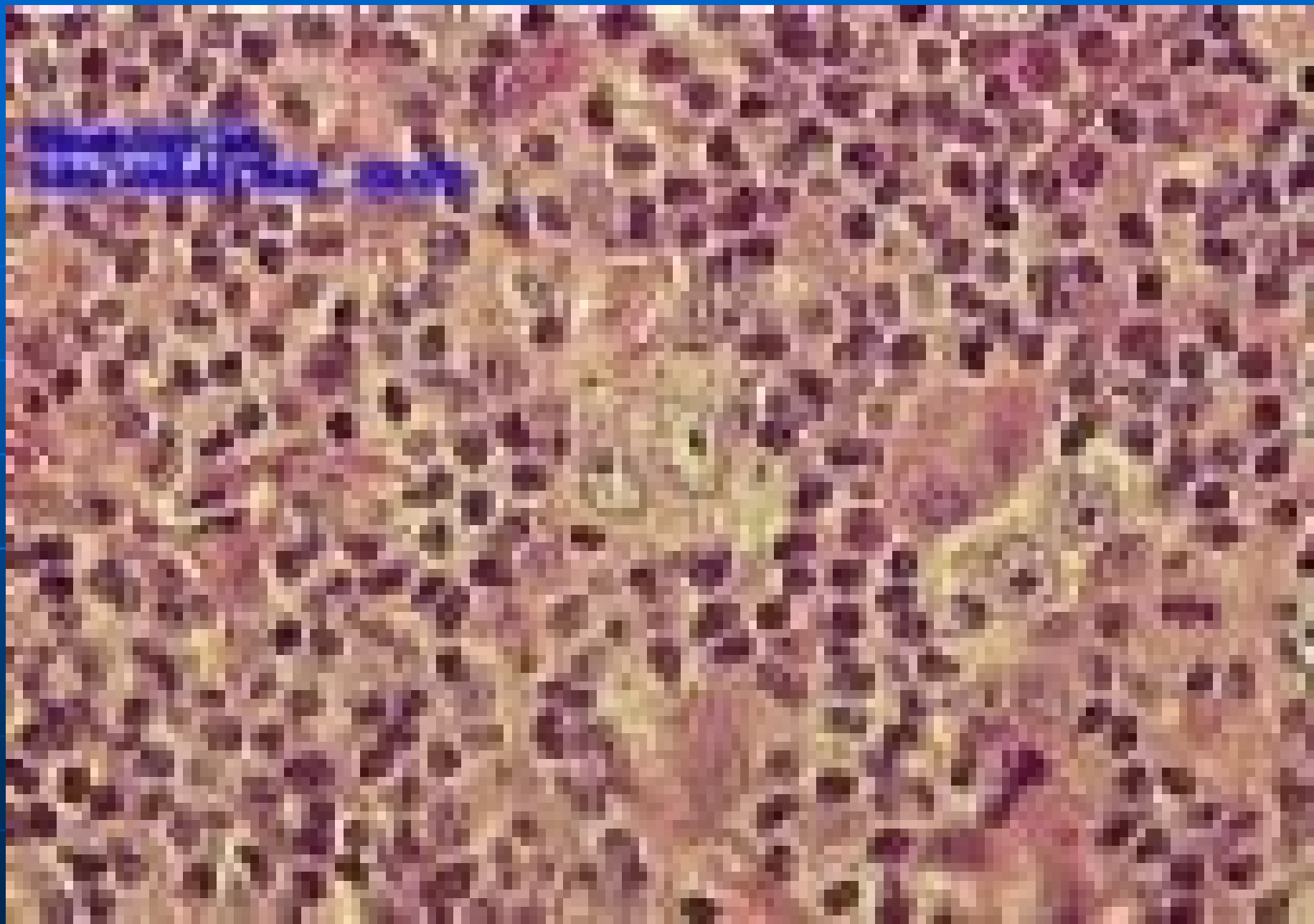
4. Advanced disease-lymphopenia

5. Platelet count is N or high

6. ESR usually raised its useful monitoring marker

7. BMA , trephine Biopsy





Immunological Findings

- Reduced cell-mediated immune reaction
  * Infection

- Humoral immunity is maintained until later stages

Non-Hodgkin's Lymphomas (NHL)

Mostly of B- lymphocyte origin

The incidence of this disorder is increasing at an annual rate of 4% for men and 3% for women

Viruses

HTLV-1

EB

HIV

? Hep-C Virus

Continuation of Non-Hodgkin's Lymphomas (NHL)

Cytogenetics and Oncogenes
Burkett's Lymphoma ~MYC
t (8:14), t (8:22), t(2:8)
Immuno Suppression e.g.
Coeliac Disease
Dermatitis herpetiform

Autoimmune diseases ~ NHL ↑ frequency

Clinical Features

Peripheral Lymhadenopathy

Abdominal or mediastinal masses

C.N.S.or bone marrow involvement

Waldeyer's rings 15-30 %

Constitutional symptoms e.g. fever,night sweat, and weight loss

Anemia, neutropenia, & thrombocytopenia

Involvement of other organs e.g. skin, brain, testes, etc.

Treatment

- Supportive if required

- Radiotherapy

Chemotherapy (cyclical)

Oral findings

Ulcerations
Masked or unusual infections
Sub mucosal hemorrhage
Spontaneous gingival bleeding
Paresthesias

Potential problems related to dental Treatment

- Excessive bleeding
- Infections
- Poor wound healing
- Oral lesions
- Mucositis

Thank you