Chronic Leukaemia

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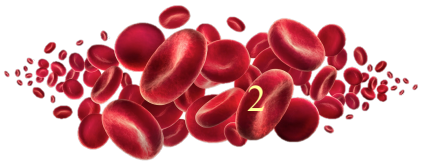
Chronic Leukaemia

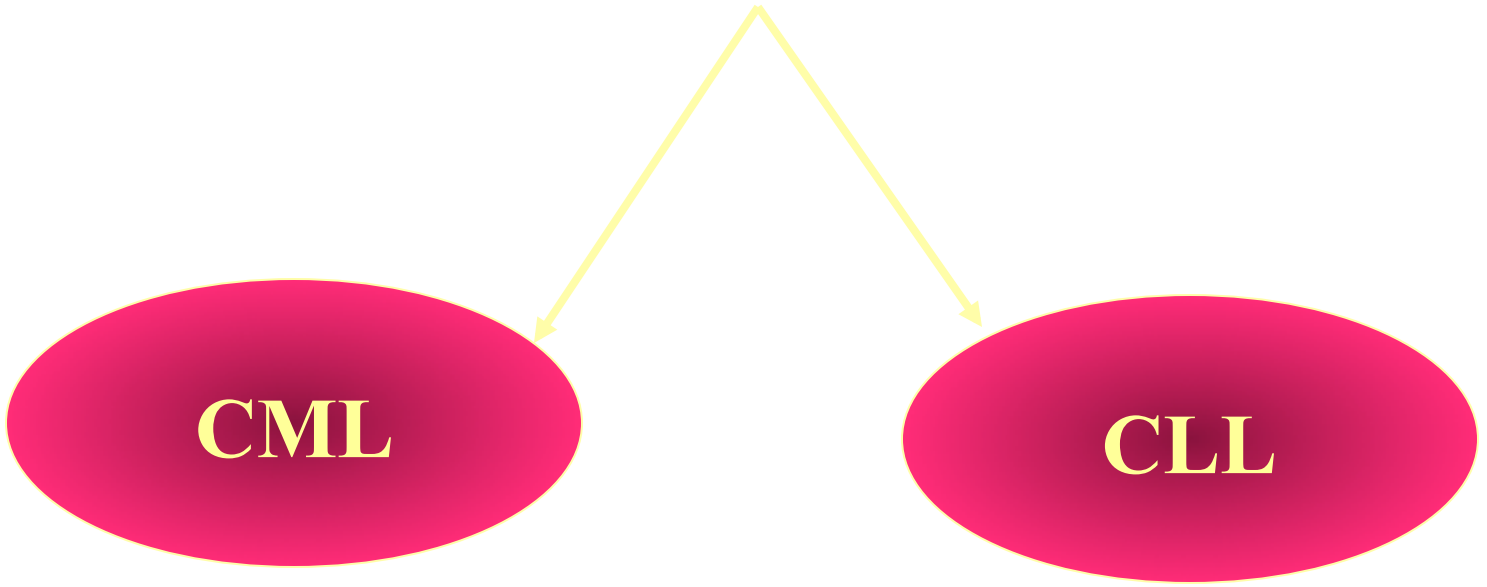
Intermediate Objectives	Broad Content Areas
Be able to describe	
• the genetic basis of aetiology (in CML) • classification • use of laboratory investigations • principles of management of chronic leukaemia	Chronic myeloid luekaemia Chronic lymphocytic leukaemia



Chronic Leukaemia

Characterized by the presence of increased number of **mature** leucocytes in the peripheral blood

Chronic Leukaemia



Chronic Myeloid (CML) Leukaemia

CML

- Mostly in the middle age
- Acquired abnormality present in all haemopoietic stem cells
- ↑ granulocytes responsible for the clinical features
- 95% Philadelphia chromosome +ve

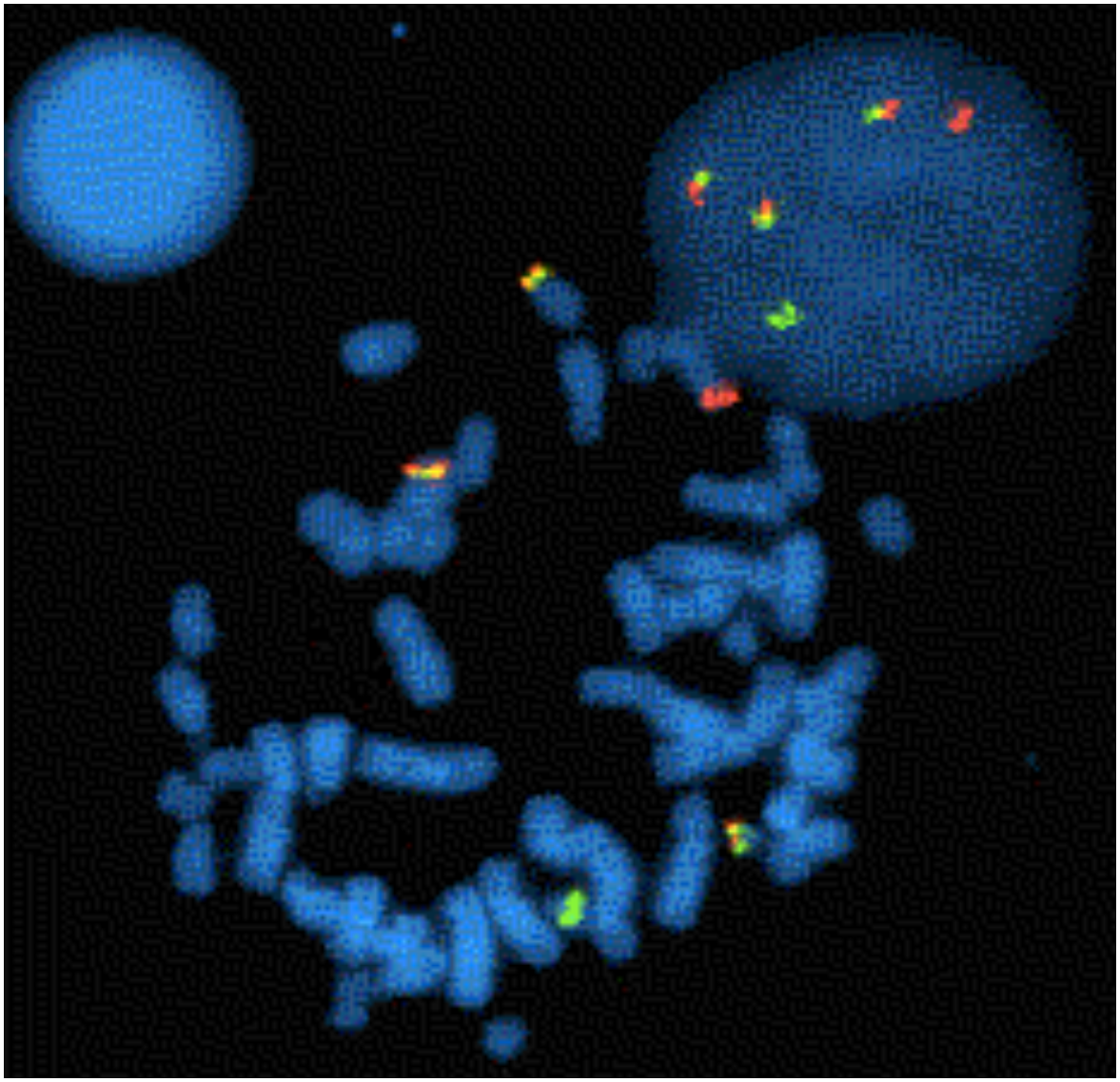
Chronic myeloid leukaemia

- BCR – ABL +ve Chronic myeloid leukaemia
- BCR – ABL –ve chronic myeloid leukaemia
- Chronic neutrophilic leukaemia
- Chronic eosinophilic leukaemia
- Chronic myelomonocytic leukaemia
- Chronic monocytic leukaemia
- Juvenile chronic myelomonocytic leukaemia

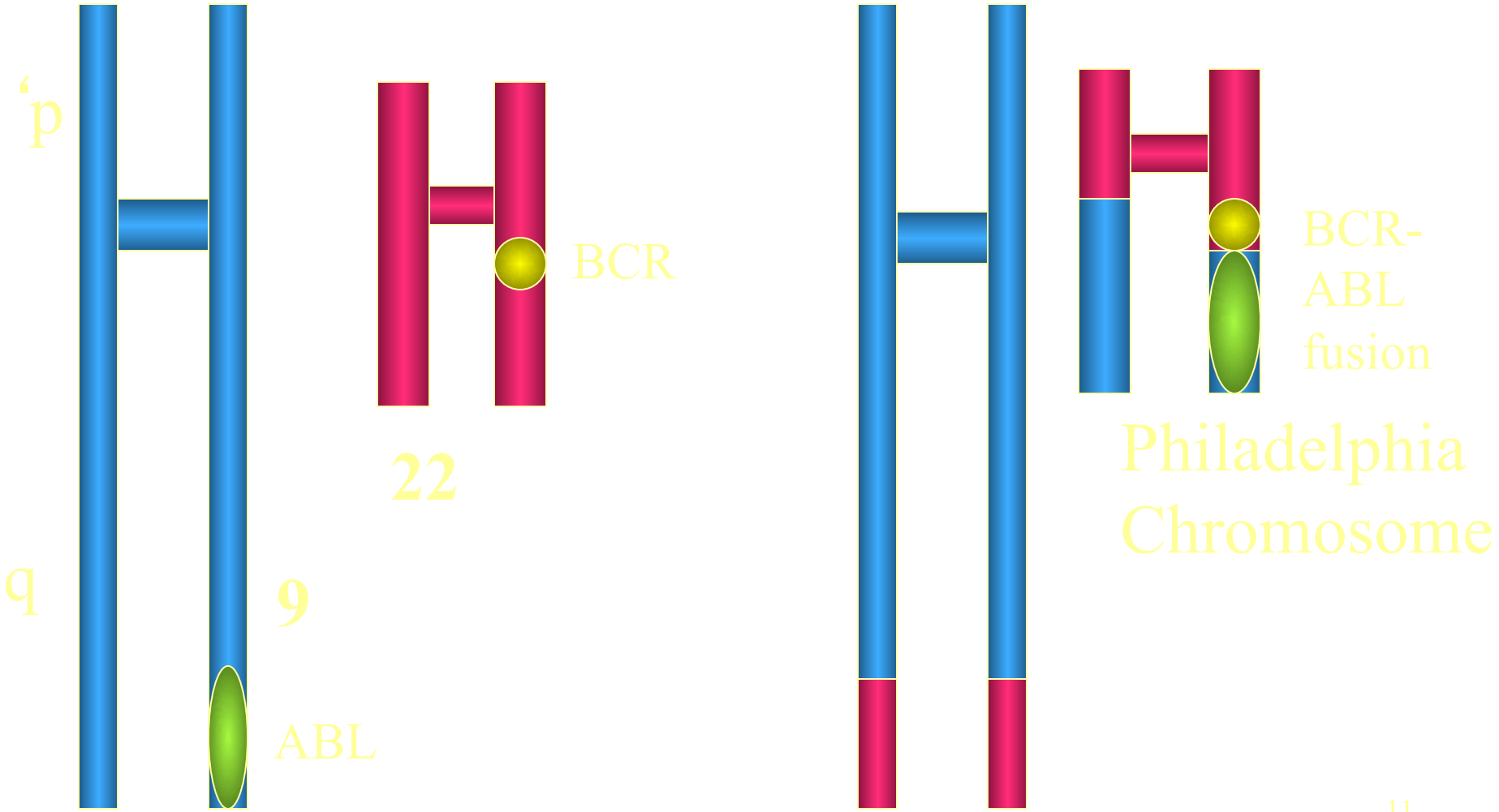
Chronic myeloid leukaemia

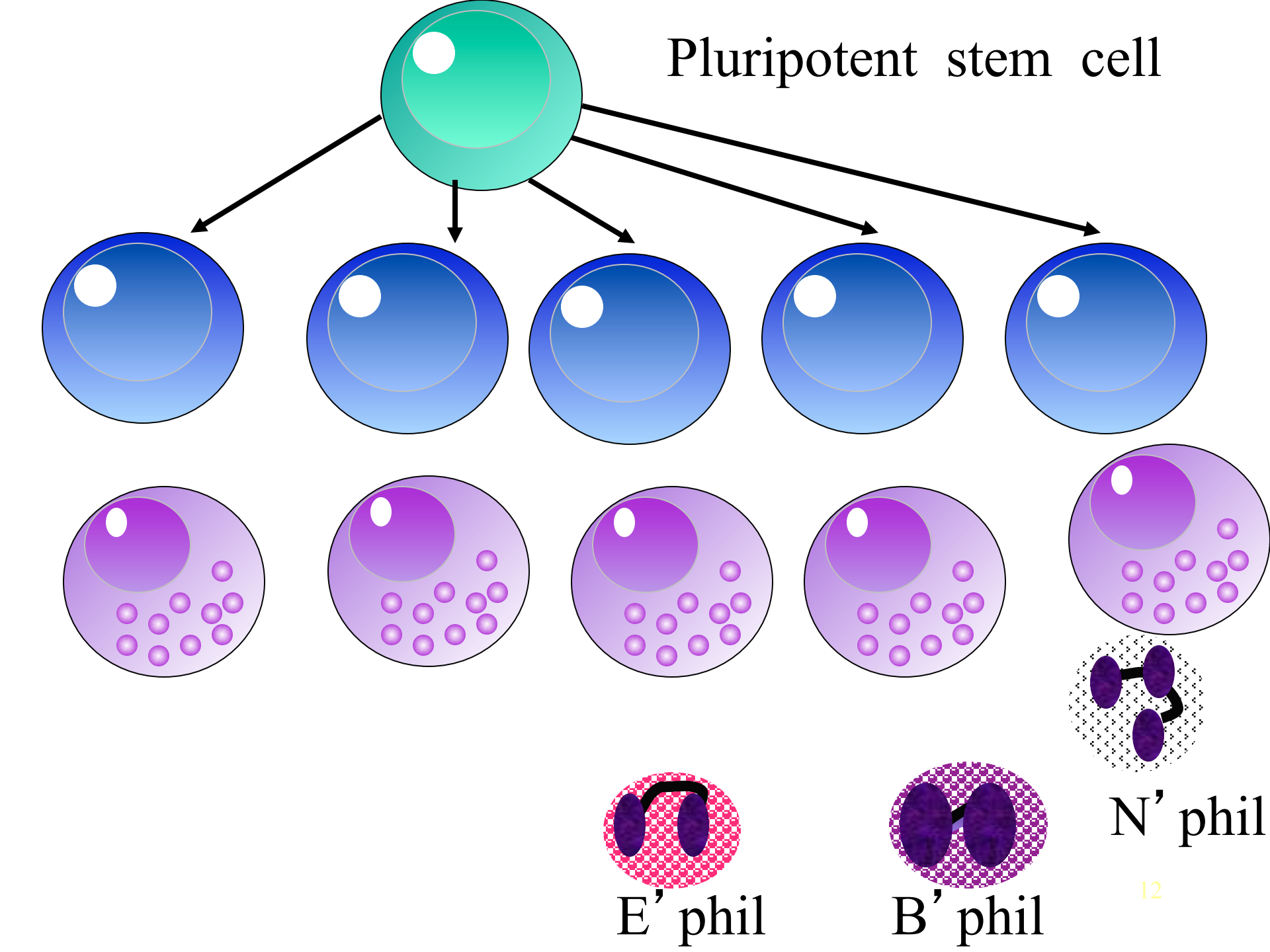
Cytogenetics

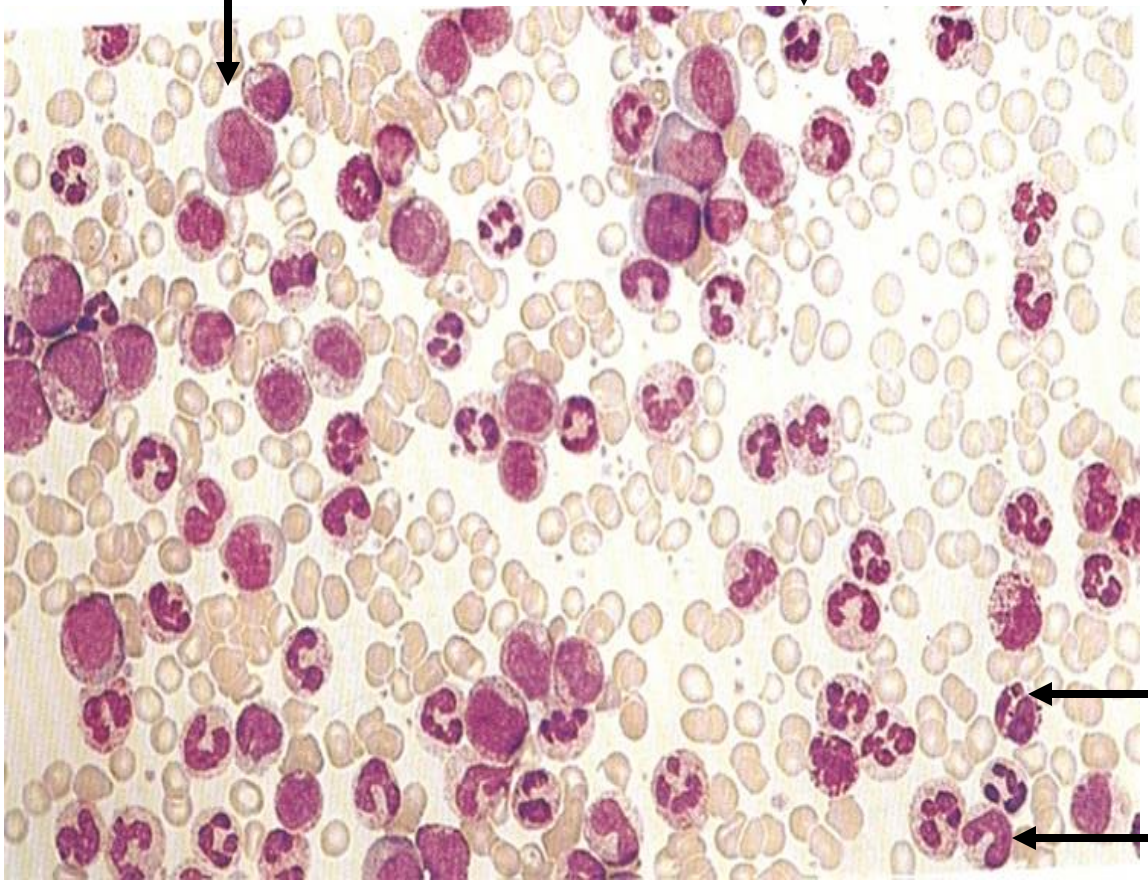
FISH



Philadelphia Chromosome




Pluripotent stem cell
N' phil
E' phil
B' phil


Neutrophil
Myelocyte
Basophil
Metamyelocyte

Clinical Features

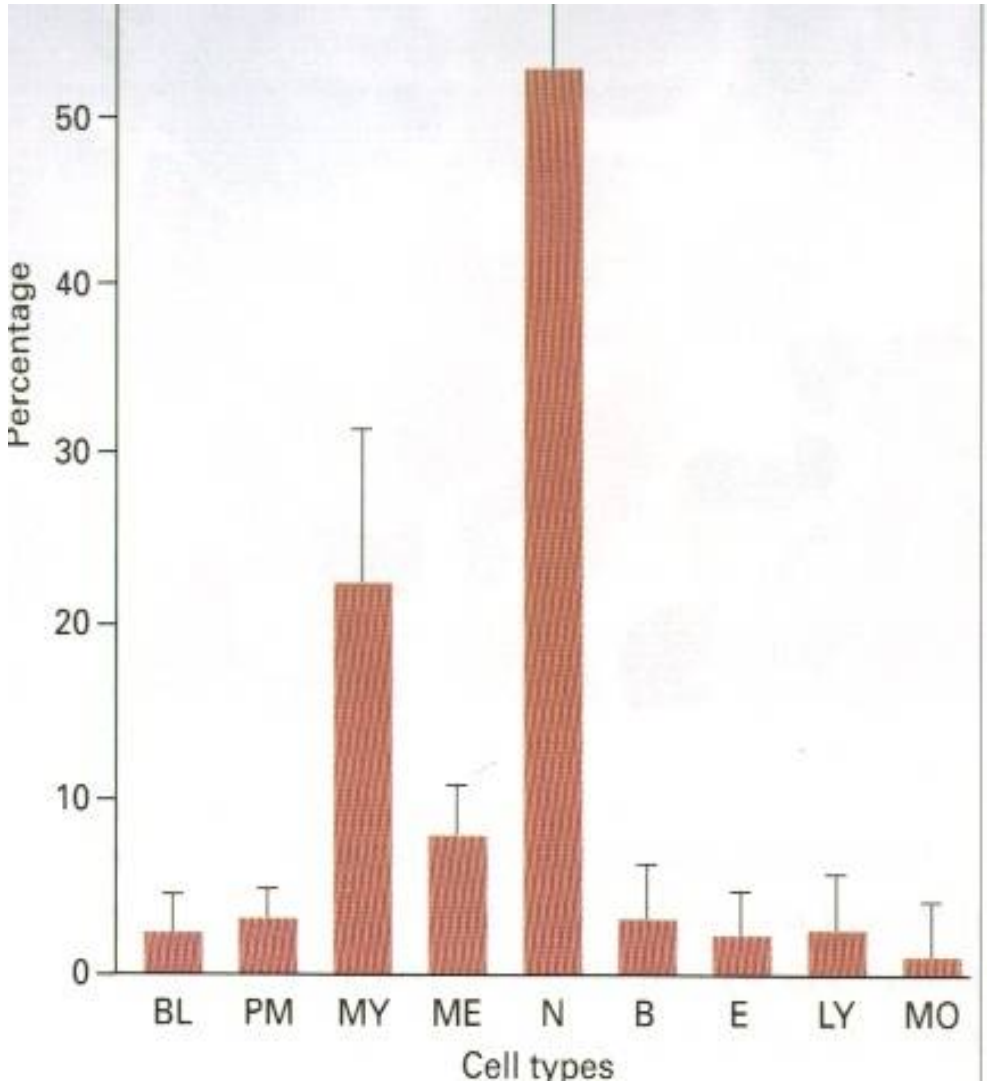
- Males > females
- 40 - 60 yrs
- Clinical features - Hyper metabolism
- LOW
- Lassitude
- LOA
- Night sweats

Clinical Features

- Massive Splenomegaly
- Anaemia
- Abnormal Platelet Function
- Gout
- Rare - Visual disturbances,
- Priapism

Lab. Findings

- ↑ WBC >50 x 10^9/l - 500
- - complete spectrum of myeloid series
- More neutrophils & myelocytes than blasts & pro myelocytes (dual peaks)
- Philadelphia chromosome +ve
- Bone marrow - Hypercellular M >>> E
- ↓ **N**eutrophil **A**lkaline **P**hosphotase score



Important to differentiate a leukemoid reaction from CGL

CGL

- Chronic phase
- Accelerated phase
- Blast crisis

Lab. Findings

- ↑ Basophils
- Normocytic Normochromic Anaemia
- Platelets mostly ↑ , normal / ↓
- B_{12} binding capacity ↑
- ↑ Serum uric acid

Prognosis

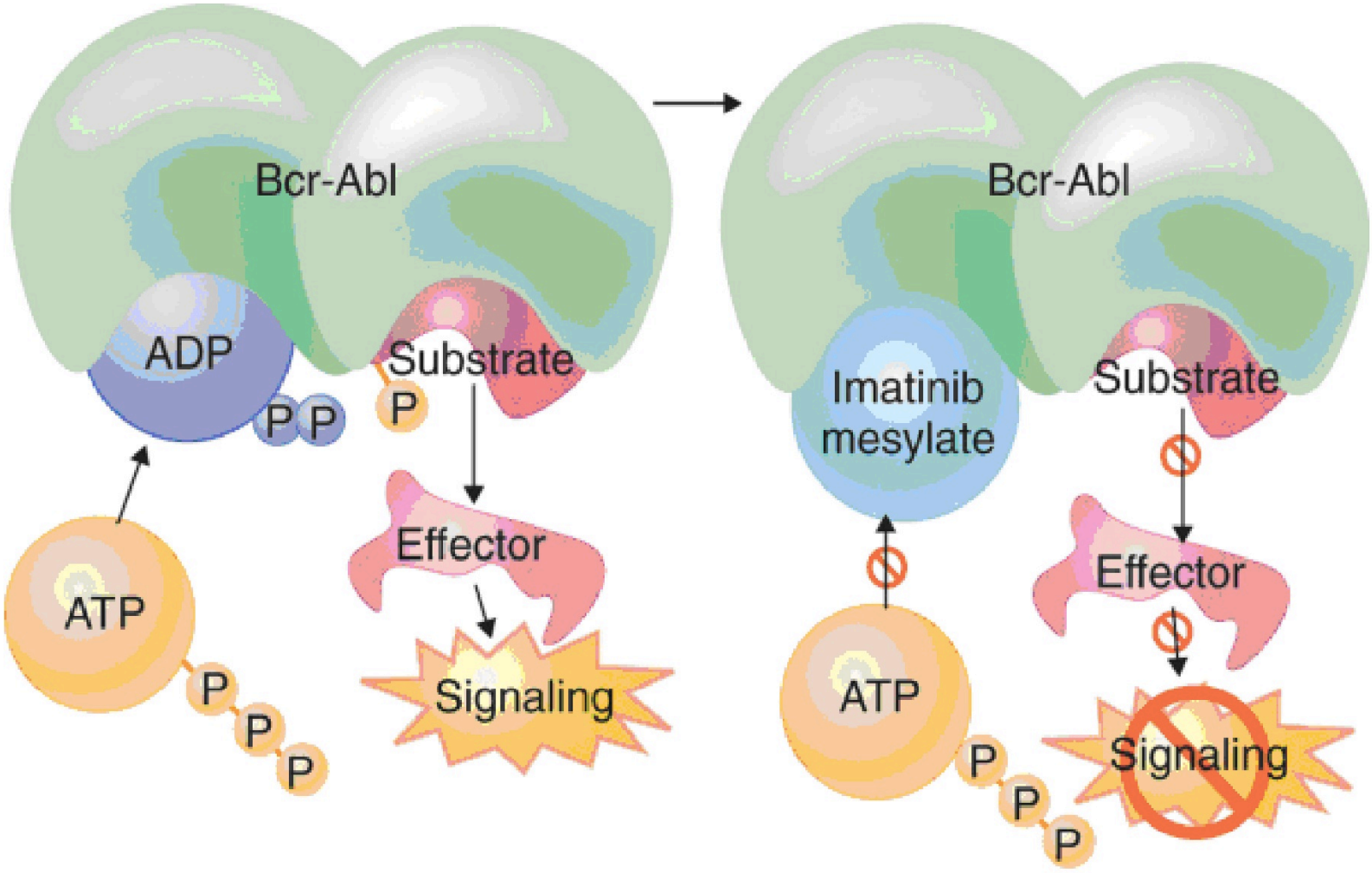
- Age
- splenic size
- Platelets
- Blasts % at presentation
- Response to therapy

Treatment

- α interferon
- Hydroxyurea
- Allopurinol
- splenic irradiation
- Imatinib mesylate - Glivec

- Bone marrow transplantation

Imatinib Mesylate



CLL

Chronic Lymphocytic Leukaemia

- Incidental finding of Lymphocytosis
- Absolute lymphocyte count $> 5{,}000/mm^3$
- Median age 70 yrs
- Males : Females 2 : 1

Chronic Lymphocytic Leukaemia

- Survival 2 – 10 yrs
- Prognosis related to extent organ infiltration at diagnosis
- 90 % B cell disorders

Diagnosis - Flowcytometry

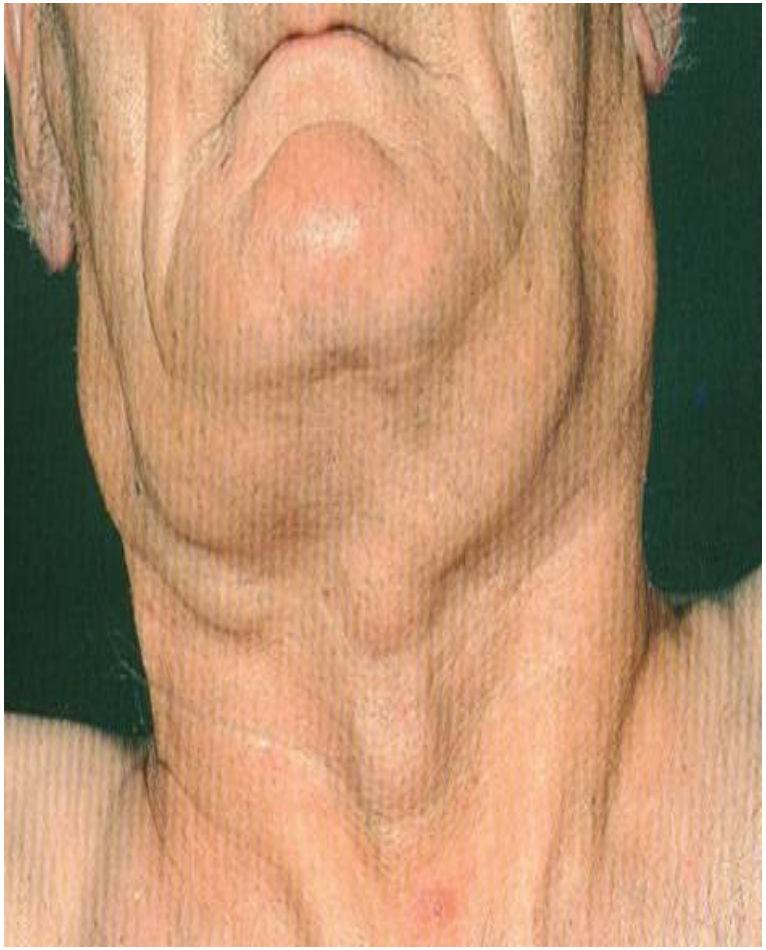
Modified CLL scoring system

Antigen	Expression	Score
CD5	Positive	**+1**
CD23	Positiv	**+1**
CD79b	Neg/Weak	**+1**
FMC	Negative	**+1**

Signs & Symptoms

- Incidental finding
- Malaise
- Low grade fever
- Night sweats
- Weight loss
- Fatigue
- Lymphadenopathy

Lymphadenopathy



Oral candidiasis

CLL - staging

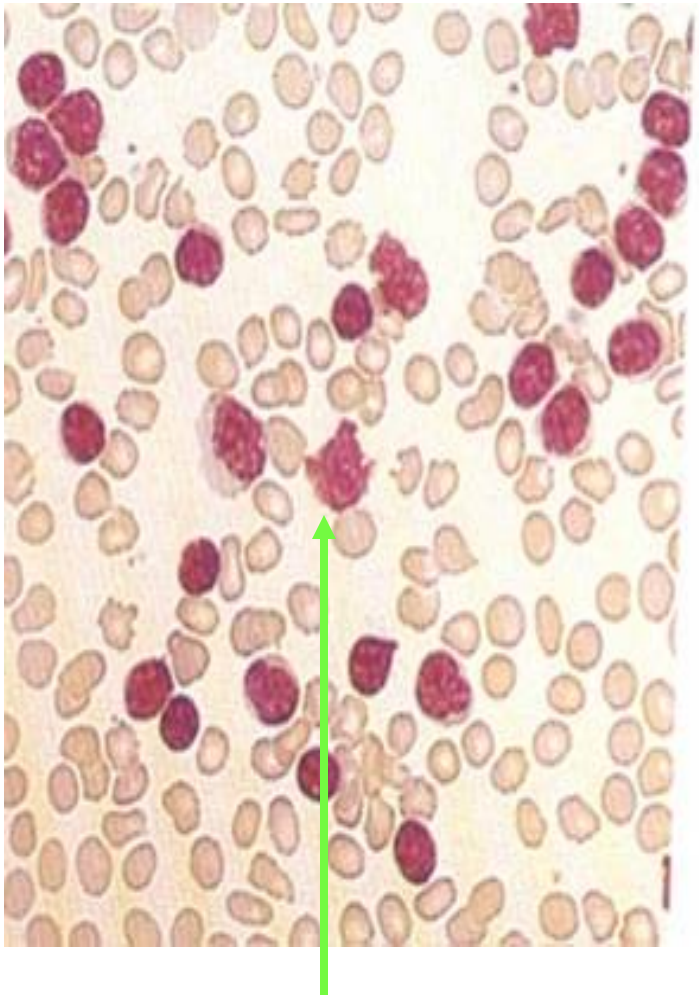
- 0 – bone marrow + blood lymphocytosis
- I – Lymphocytosis + LNs
- II – Lymphocytosis + liver / spleen / both
- III – lymphocytosis + anaemia
- IV – lymphocytosis + thrombocytopenia

Lab findings

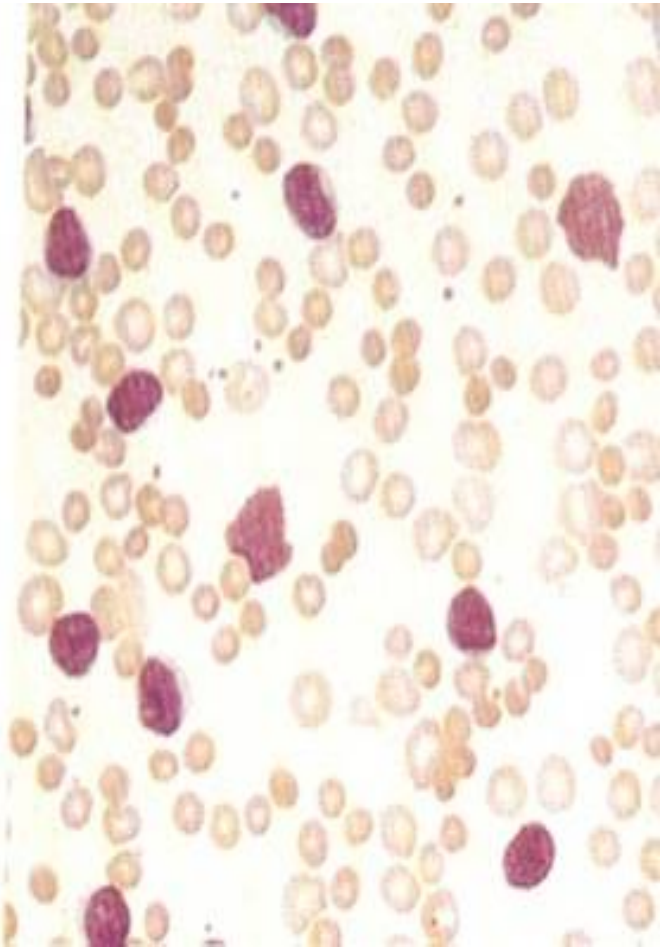
- Absolute lymphocytosis
- Smudge cells in the blood picture
- 30 – 200,000 WBC
- Hypogammaglobulinaemia

Complications of CLL

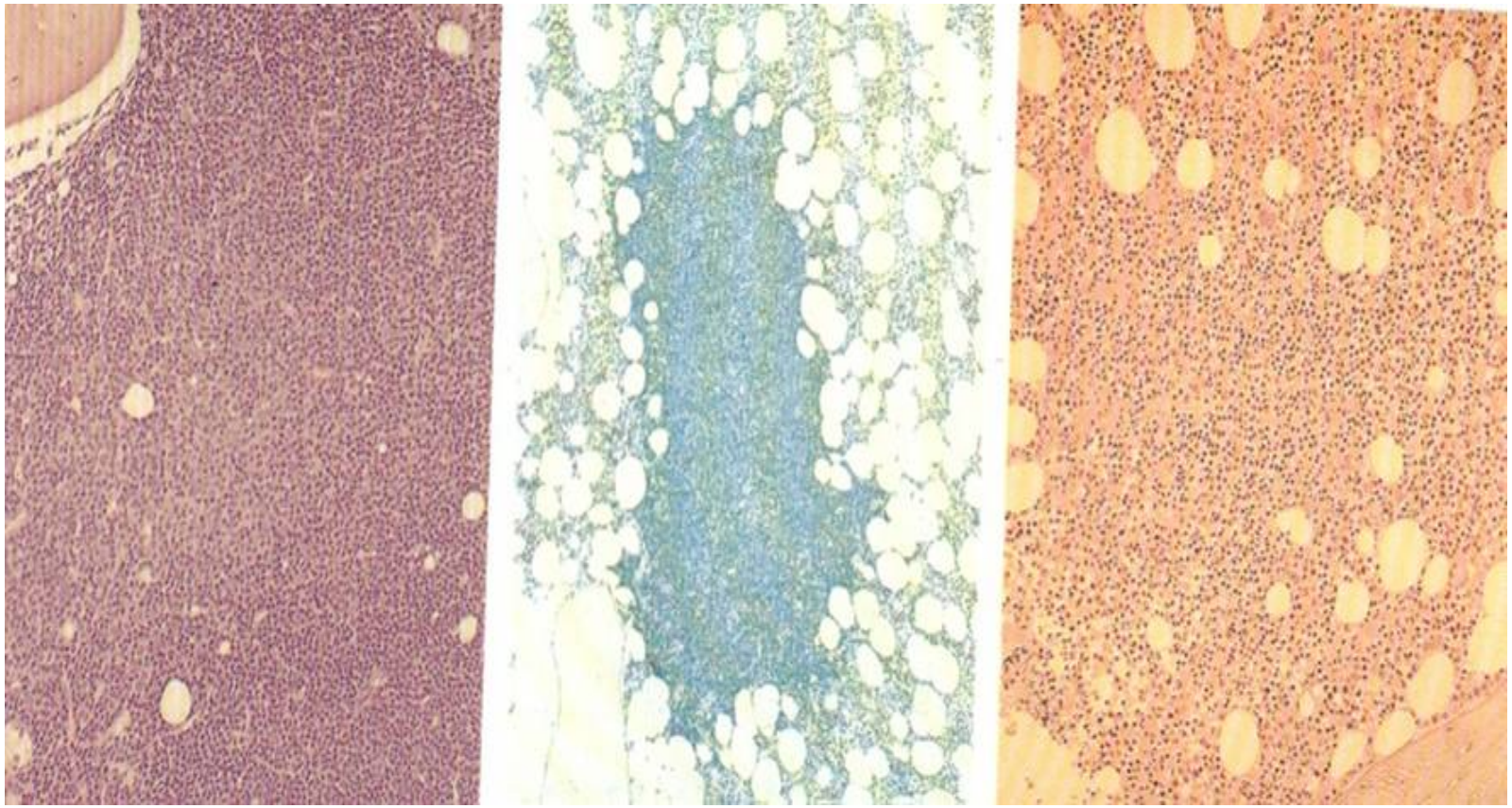
- Infections
- Altered humoral immunity
- Hypogammaglobulinemia
- Auto immune diseases – AIHA, ITP



Smudge cells



Small mature lymphocytes



Trephine biopsy showing marrow infiltration

Treatment

- No therapy needed for stage I
- Symptomatic therapy for infections, skin infiltration
- Chlorambucil