




LYMPHOPROLIFERATIVE DISORDERS

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-  Impotent
-  Notes
-  Doctor's slides

LYMPHOPROLIFERATIVE DISORDERS

Several clinical conditions in which lymphocytes are produced in excessive quantities (Lymphocytosis)

Lymphoma

Malignant lymphoid mass involving the lymphoid tissues (\pm other tissues e.g :skin ,GIT ,CNS ...)

Lymphoid leukemia

There is no mass

Malignant proliferation of lymphoid cells in Bone marrow and peripheral blood (\pm other tissues e.g : lymph nodes ,spleen , skin ,GIT ,CNS ...)

Lymphoproliferative disorders

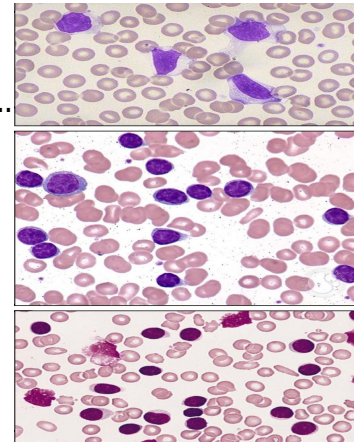
Autoimmune

Infection

Malignant

Lymphocytosis

- **Viral infection** \rightarrow Infectious mononucleosis , cytomegalovirus ,rubella, hepatitis, adenoviruses, varicella..
- Some bacterial infection: (Pertussis ,brucellosis ...)
- Immune : **SLE** , Allergic drug reactions.
- Other conditions:, splenectomy, dermatitis ,hyperthyroidism metastatic carcinoma....).
- **Chronic lymphocytic leukemia (CLL)**^[1]
- Other lymphomas: Mantle cell lymphoma ,Hodgkin lymphoma.

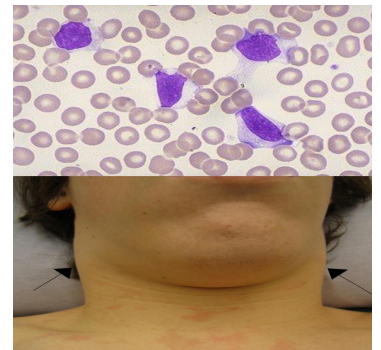


Infectious mononucleosis

Called kissing disease

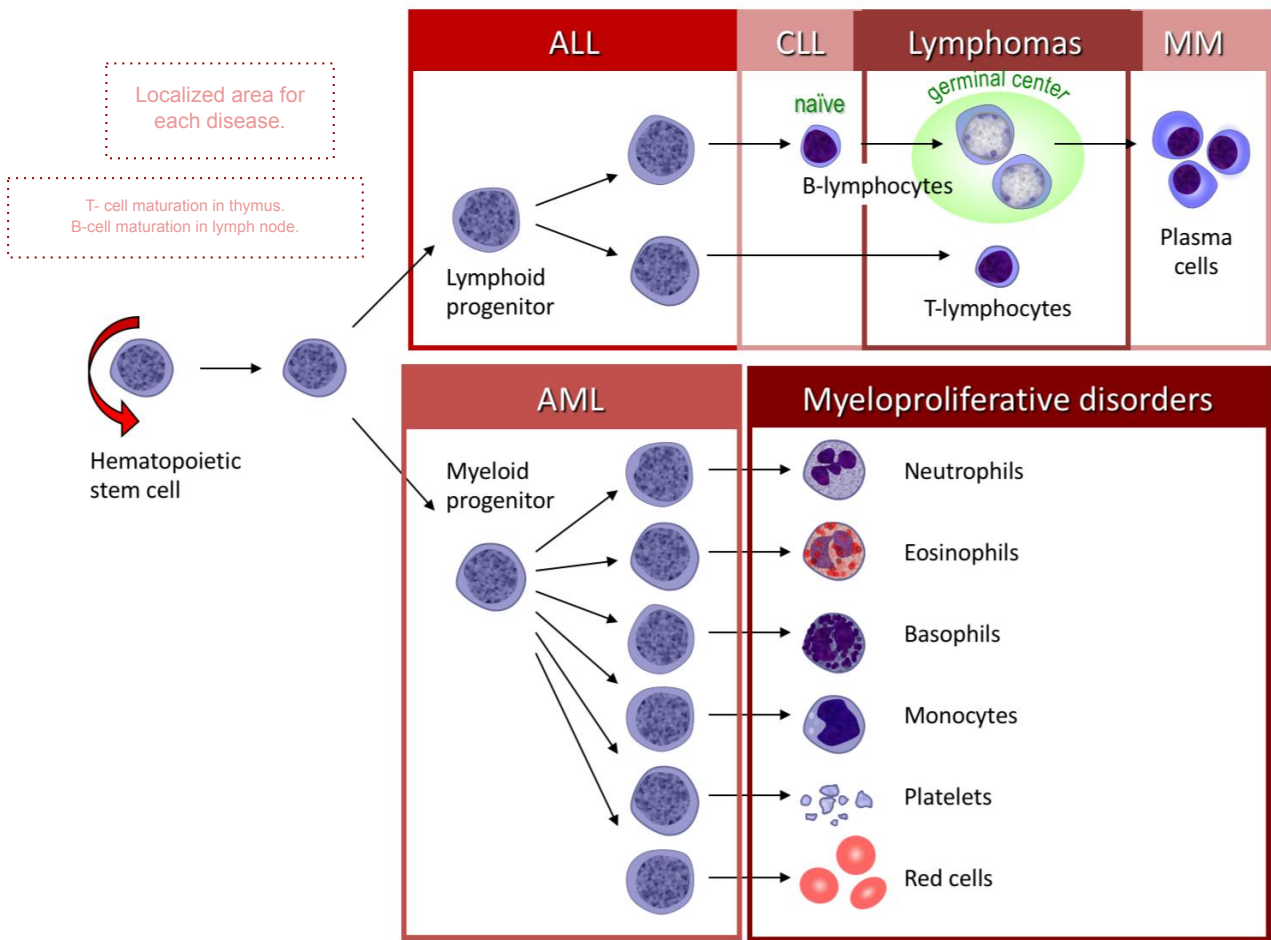
An acute, infectious disease, **caused by Epstein-Barr virus** and characterized by

- fever.
- swollen lymph nodes (painful).
- Sore Throat,
- **atypical lymphocyte**.^[2]
- Affect young people (usually)

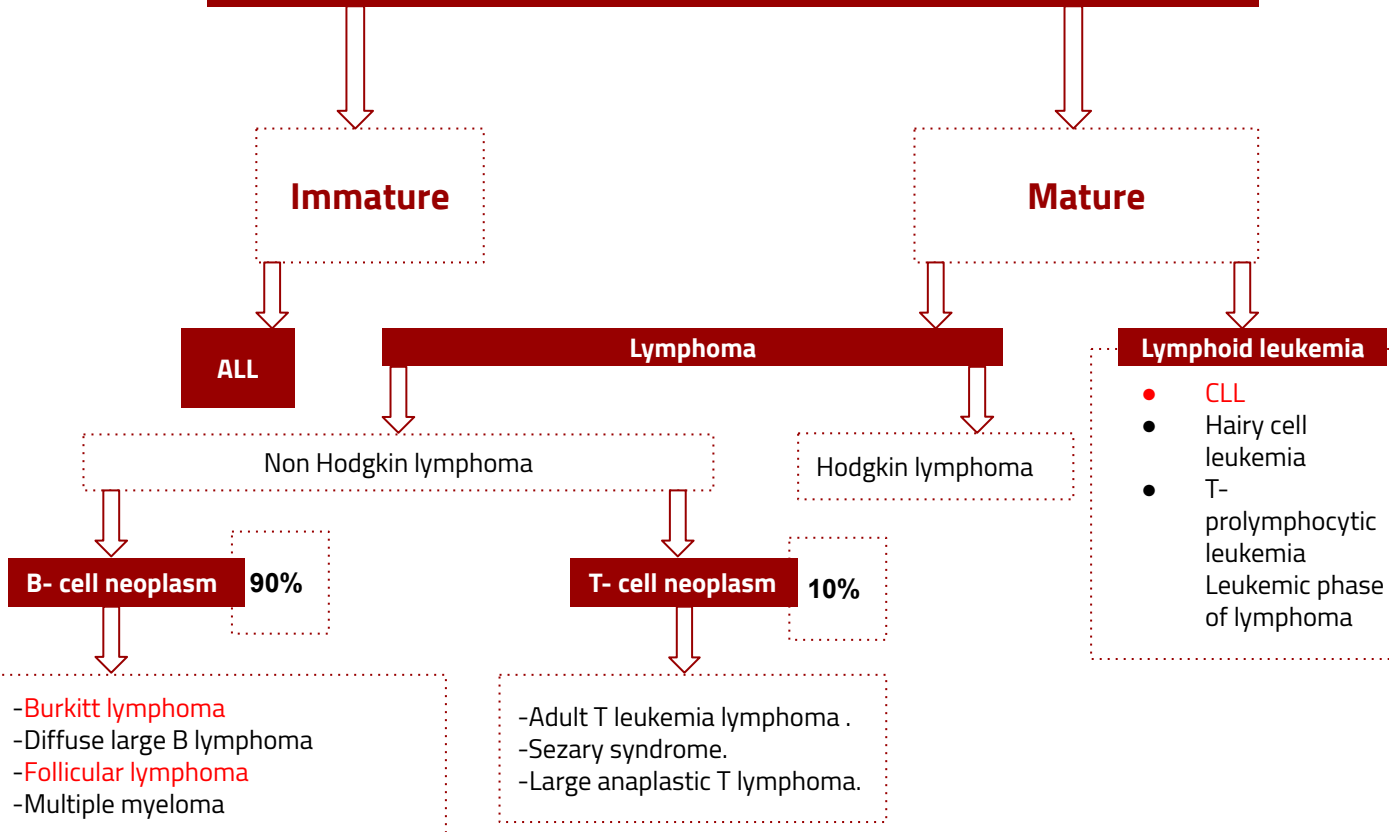


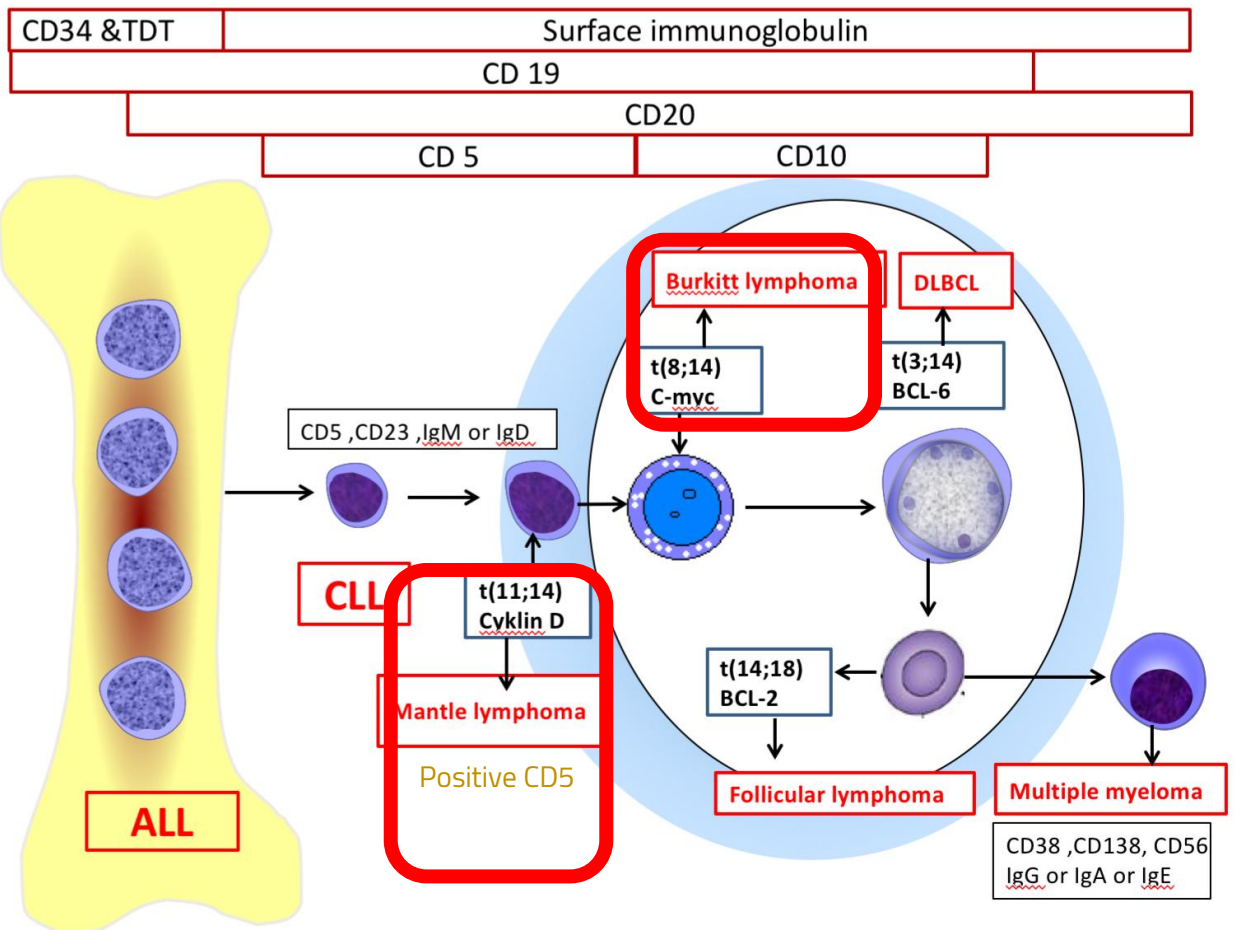
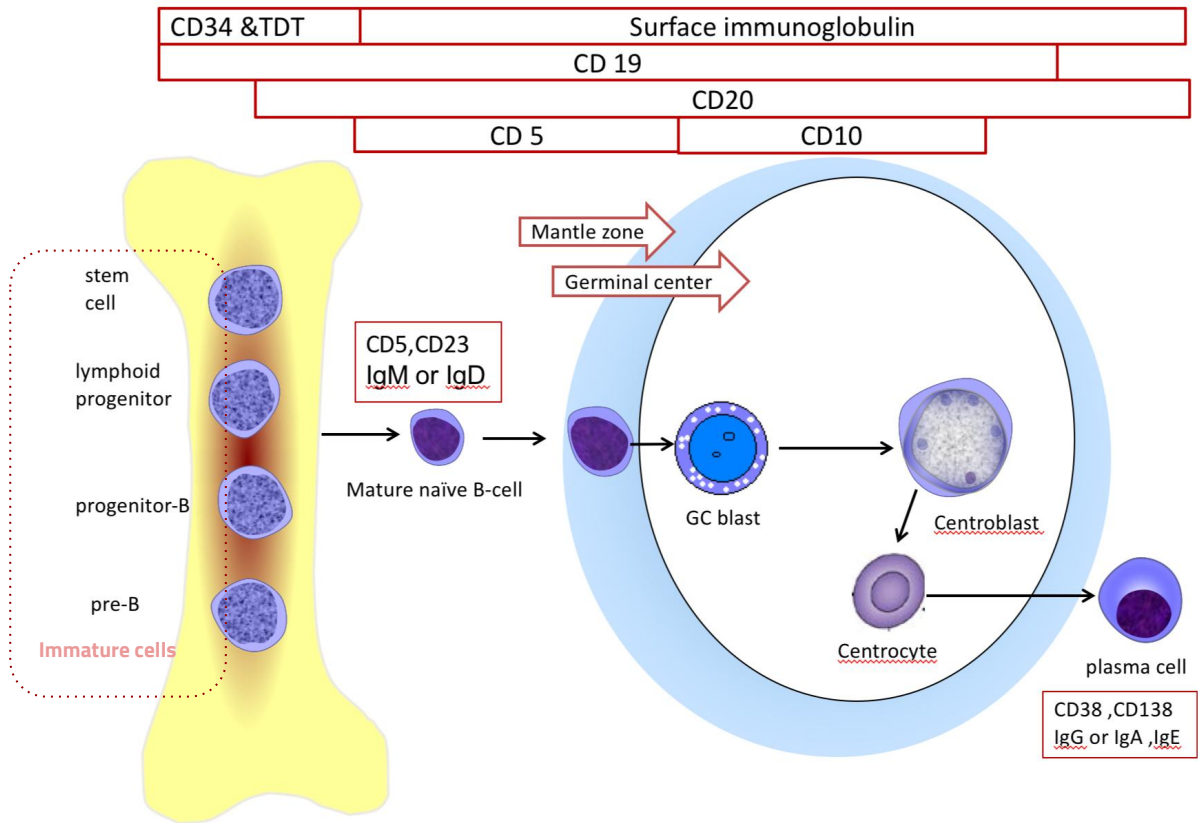
[1] the most important cause in adults.

[2] atypical = large ... infectious = large lymphocyte , non infectious = small lymphocyte.



Malignant Lymphoproliferative Disorders



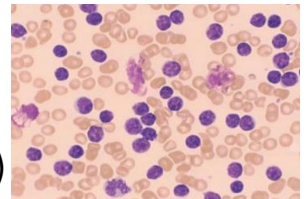
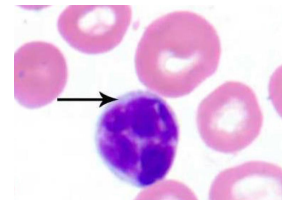


Chronic Lymphocytic Leukemia

- Malignant neoplasm characterized by an **increased number of small, mature lymphocytes in the blood (>5,000)** and bone marrow (± spleen and lymph node)
- The Most Common Adult Leukemia (~25% of adult leukemias).
- The median age is ~55 to 65 years. (rare < 40 years).
- 1.5 to 2 times more common in men than women.

Features of CLL

- 40% of patients are asymptomatic at diagnosis.
- Moderate **lymphadenopathy** and splenomegaly.
- **Lymphocytosis (>5,000)**:
 - Small mature-appearing lymphocytes.
 - Condensed ("**soccer ball**") nuclear chromatin .
 - Numerous "**smudge cells**".
- Predisposition to infection.
- **Autoimmune phenomena** (autoimmune hemolytic anemia).
- Transformation to **large cell lymphoma (Richter's syndrome)**



CLL Staging

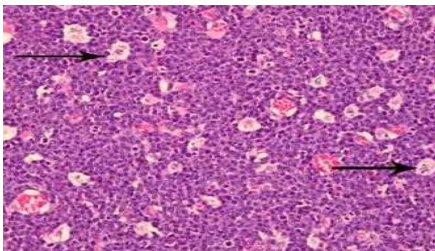
Rai Staging	Prognosis
Stage 0: Lymphocytosis only (blood and marrow)	Low risk Watch & wait
Stage I: Lymphocytosis plus enlarged nodes	Intermediate ±chemo
Stage II: Lymphocytosis plus enlarged spleen and/or liver, ± nodes	High risk FCR
Stage III: Lymphocytosis plus anemia (Hgb <11 g/dL), ± above	
Stage IV: Lymphocytosis plus thrombocytopenia (<100 × 10 ⁹ /L) ± above	

Burkitt's lymphoma

- High-grade non-Hodgkin's B-cell lymphoma which is rapidly growing and highly aggressive with extremely short doubling time (24 hrs).
- Types of Burkitt's lymphoma
 - 1) **Endemic**: associated with **chronic malaria** and EBV In equatorial Africa , It particularly affects the **jaw, other facial bone and breast**.
 - 2) **Sporadic**: occurs throughout the world and affects **GIT**.
- Immunodeficiency-associated: associated with HIV infection or the use of immunosuppressive drugs.

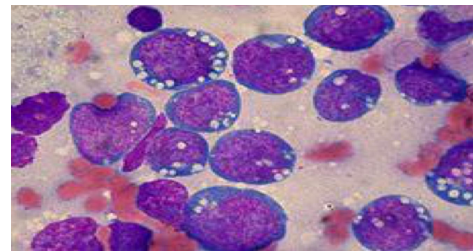
Morphology

Biopsy



Diffuse infiltration with "starry sky"
(Macrophages engulfing the apoptotic cells)

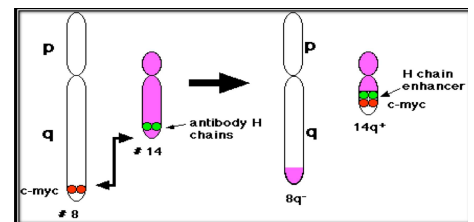
BMA



Homogenous medium size cells with round nuclei and deeply basophilic and **vacuolated cytoplasm**

Genetics of BL

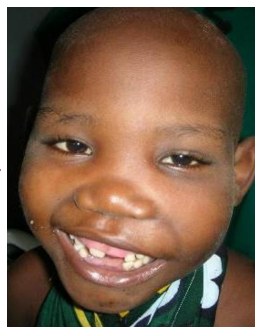
- Highly associated with **t(8;14)**: **Translocation of the c-MYC proto-oncogene** at chromosome 8 to immunoglobulin gene at chromosome 14.
- The c-MYC is nuclear transcription factor .
- Burkitt's lymphoma is the fastest growing tumor in humans.



Clinical Presentation



After 25 D
of intensive
chemotherapy



Cure rate:
-90% at early phase.
-70% at advance disease

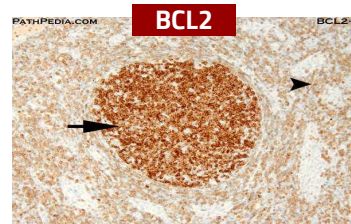
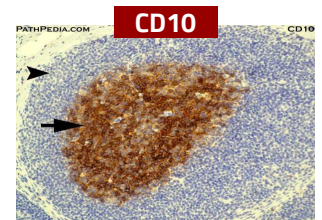
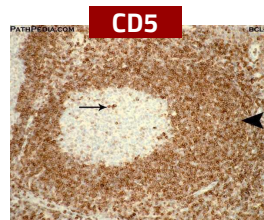
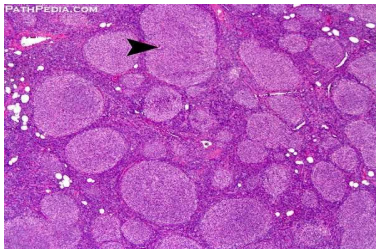
Follicular lymphoma

It's accumulating disease, so we don't use chemotherapy on them

- FL is malignant proliferation of **germinal center B cells** centrocyte which has at least a partially follicular pattern.
- Due to overexpression of **Bcl2₍₊₎** caused by **t(14;18)**.
- Most common type of "indolent" lymphoma (25%).
- Presented as:
 - **Lymphadenopathy (100%)**
 - splenomegaly (80%)
 - BM involvement (60%)
 - blood involvement (40%).
- Indolent but incurable (some exceptions)

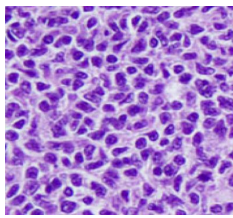
Diagnosis

- Immunophenotyping:
 - **Positive for CD10, CD20 and Bcl2.**
 - **Negative for CD5 (in most cases).**



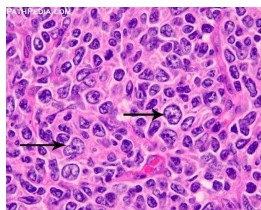
Management

- Median survival is around 10 years.
- Transformation to aggressive lymphoma (DLBCL) can occur.



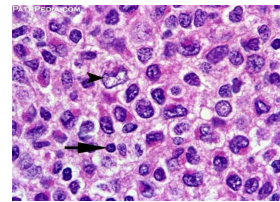
Low grade FL

Watch and wait
(most often)



Aggressive FL in
transformation

Chemotherapy

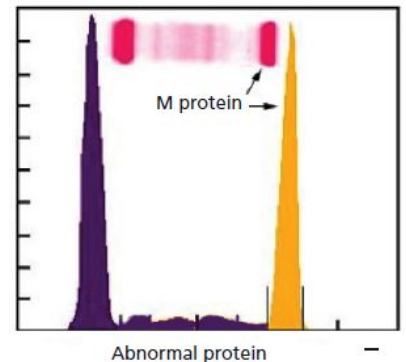
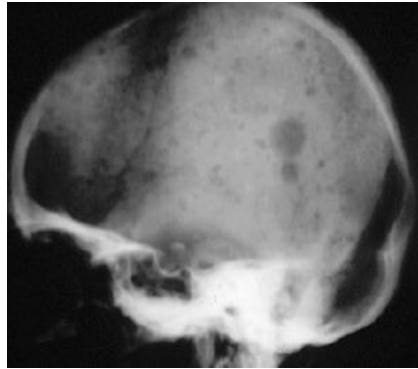
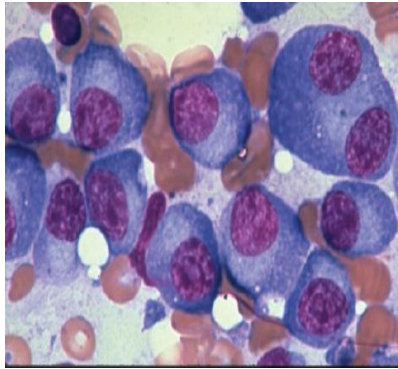


transformation
(DLBCL)

Aggressive
Chemotherapy(±
SCT)

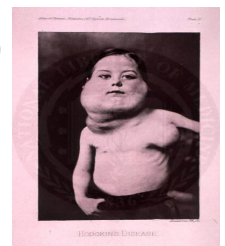
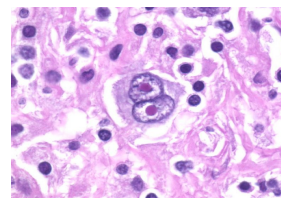
Multiple Myeloma

- **Malignant B neoplasm** characterized by a triad of abnormalities:
 - **Accumulation of plasma cells in the bone marrow**
 - **Lytic Bone lesions**
 - Production of a **monoclonal immunoglobulin (Ig)** or Ig fragments
 - Anemia
 - hypercalcemia due to osteoclast over stimulation and bone destruction .

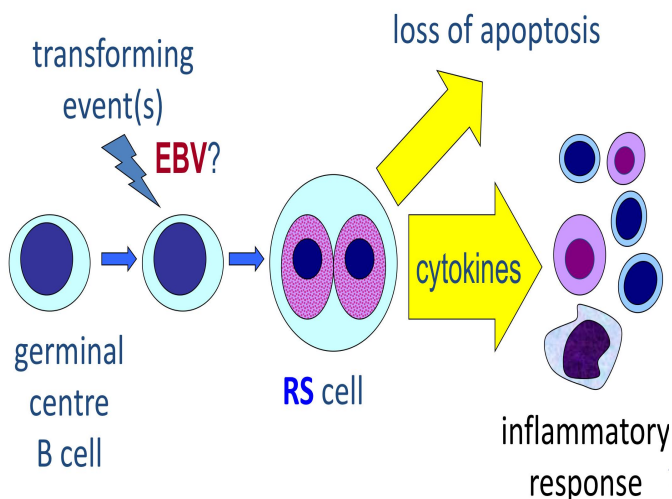


Classical Hodgkin

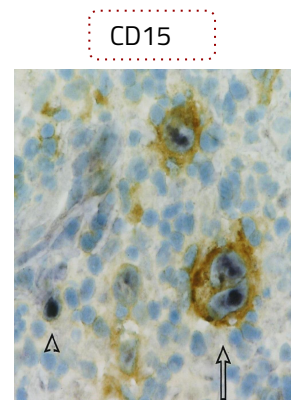
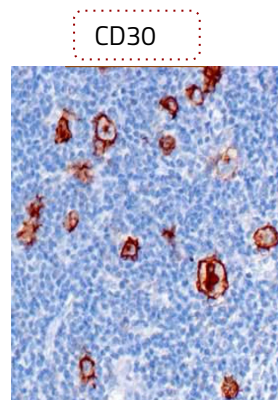
- Indolent malignant lymphoma characterized by :
 - 1- presence of few **large binucleated cells (Reed-Sternberg)** surrounded by reactive cells (lymphocytes, plasma cells ,eosinophils)
 - 2- Involving cervical lymph nodes in young adults (most often)



A possible model of pathogenesis



Diagnosis of Hodgkin Lymphoma



A practical way to think of lymphoma

Category		Survival of untreated patients	Curability	To treat or not to treat
Non-Hodgkin lymphoma	Indolent	Years	Generally not curable	Generally defer Rx if asymptomatic
	Aggressive	Months	Curable in some	Treat
	Very aggressive	Weeks	Curable in some	Treat
Hodgkin lymphoma	All types	Variable – months to years	Curable in most	Treat