النادي الطبي MC

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دعواتكم ✌️❤️

ESR

PL 1

A. *Physiological Variations in ESR.*

Sex. The ESR is somewhat higher in females, probably due to lower hematocrit (PCV).

Pregnancy. The ESR begins to rise after about 3rd month of pregnancy and returns to normal a few weeks after delivery. Hemodilution during pregnancy and increased fibrinogen: albumin ratio are probably the cause of increased rouleaux formation.

Aging also increases it

B. Pathological *Increase in* ESR

ما بشخص مرض فيه وانما بتابع تطور

infections, tissue destruction (myocardial infarction) & malignancy, anemia, TB & fractures. globulin ↑ ← الترسيب ↑

ESR is increased in inflammatory conditions by 2 mechanisms:

1. Tissue destruction.
2. Increasing antibodies which are plasma proteins.

↓ mass

Since ESR increases with age, the upper limit of normal can be calculated as:

Males	**= Age ÷ 2,**
Females	**=(Age + 10)÷ 2.**

Normal *

Age of female is 60

60 + 10 ÷ 2

70 ÷ 2

35

- Decreased ESR → polycythemia, afibrinogenemia.

↓ fibrinogen

Prolonged bleeding time

PL2

- **Defect in vascular wall**
  - Scurvy (Vit. C deficiency)
  - Old age
  - Vasculitis

- **Defect in platelets**
  - Thrombocytopenia: ↓ Number < 50,000/cmm
  - Thromboathenia: Abnormal platelets receptors → Defect in platelet adhesion
  - Von Willebrand disease: ↓ VWF → Defect in platelet adhesion bleeding time +clotting time بتأثر
  - Aspirin: inhibit platelet function

وَقُل رَّبِّ زِدْنِي عِلْمًا

Prolonged clotting time

↓ Vit K	↓ Clotting factors	Liver diseases
♠Newborn: 1st week ♠Long use of antibiotics ♠Biliary tract obstruction ♠Dietary dificiency & malabsorption ♠Antagonist: warfarin	♠I:Afibrinogenemia ♠VIII: Hemophilia A ♠IX: Hemophilia B ♠XI: Hemophilia C	♠Cirrhosis ♠Hepatitis

PL.2

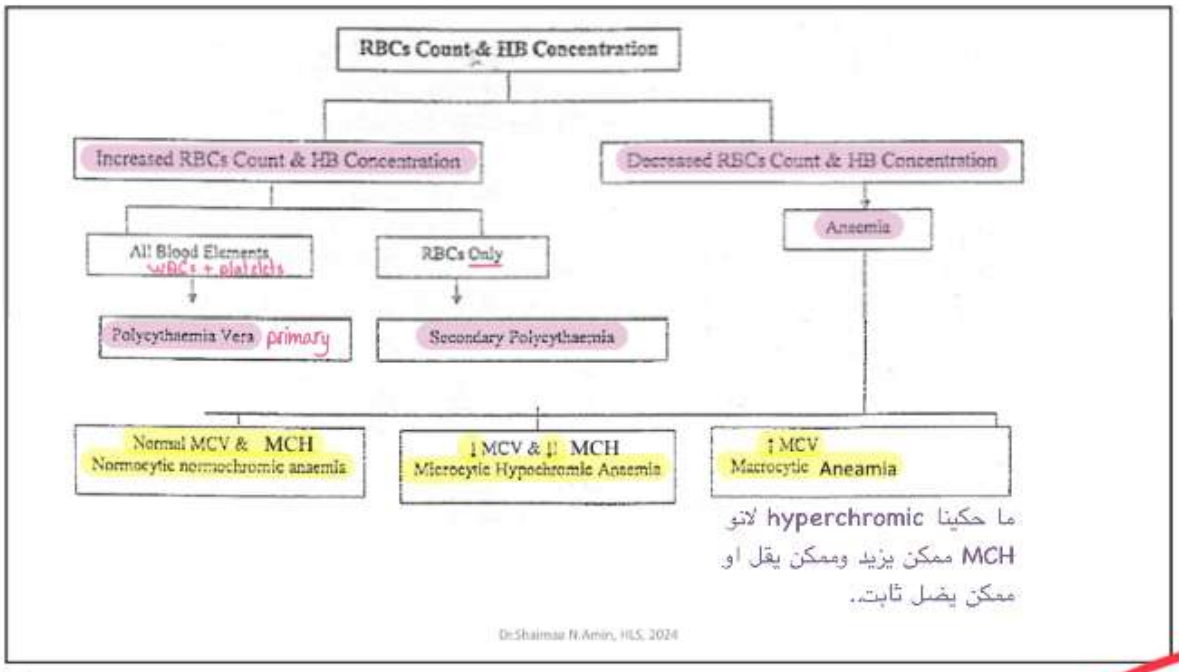
وقل رب زدني علما

النادي الطبي

Hematopoietic & Lymphatic System

Hemostatic function tests اعتمدوا الأرقام هاي

TEST	NORMAL VALUE
CBC	Platelets 150-400 x 10^3/mm^3
Bleeding time	1-4 min
Clotting time	3-10 min
PC	> 70%
PT	15 sec (test extrinsic pathway)
APTT	30-40 sec (test intrinsic pathway)
INR	0.8- 1.2



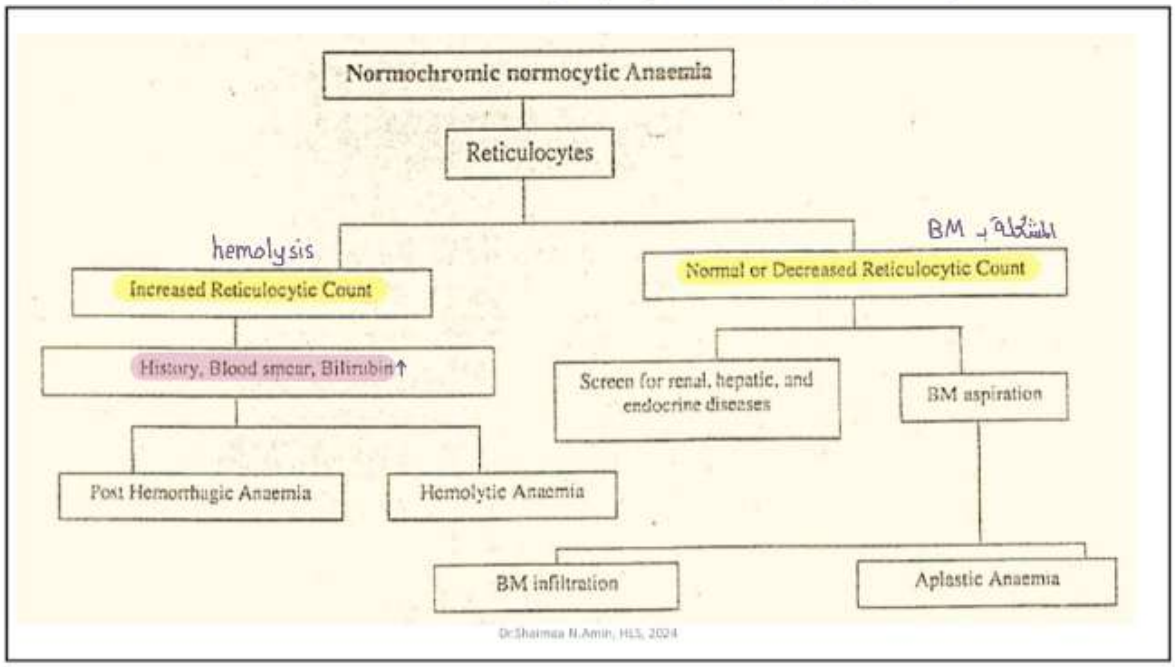
وَقُل رَّبِّ زِدْنِي عِلْمًا

PL2

النادي الطبي

HEMATOPOIETIC & LYMPHATIC SYSTEM

بشخص ب history وتحليل و examination



Lymph Node

A.L-1

M- Medulla

Cx- Cortex

C- Capsule

S- Subcapsular sinus

F- Lymphatic follicle or nodule

MC- Medullary cords

S- Trabecular sinus

P- Paracortical area or zone

H- Hilum :(Artery , Nerve, vein.) بدخل فيها

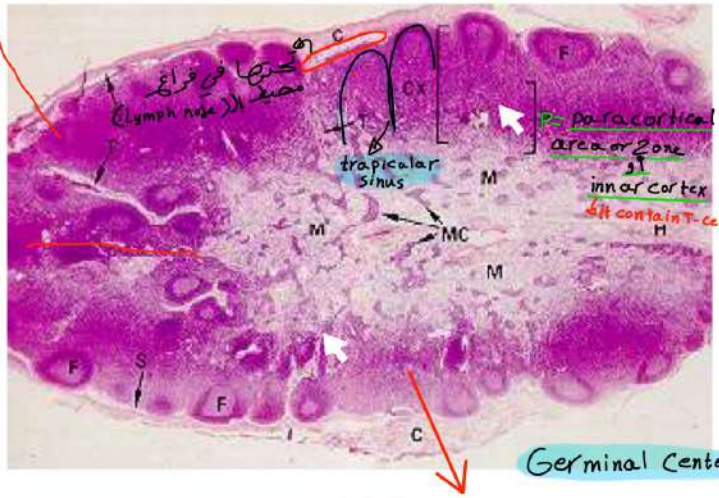
Q) What is the structure in this slide?

Ans : Lymph nodules

Dark Because it contain B-cells

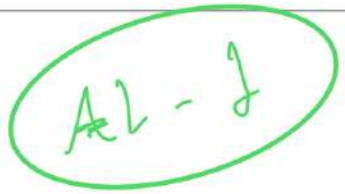
Q) which of the following is T-dependent zone

الجواب هو المنطقة اللي عليها السهم الأبيض (P)



Light Because Antigen → plasma cell صاروا

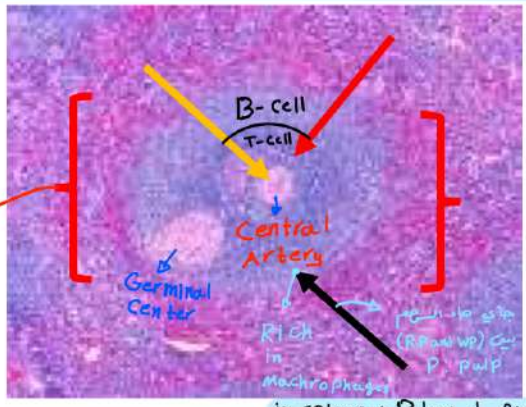
Spleen



- **Between brackets- Lymphatic Nodule**
- **Yellow arrow- Central artery**
- **Red Arrow – Periarterial sheath**
- **Black Arrow – Marginal Zone**

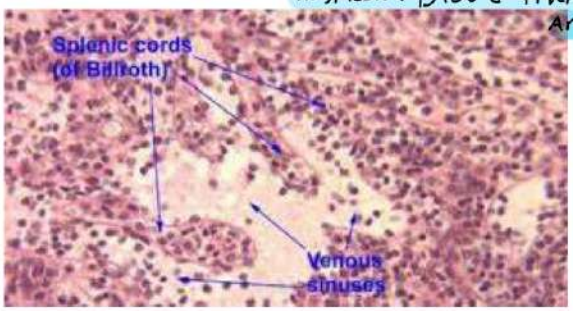
T – dependent Zone

Higher Manifestation of Lymph Node



Lymphocyte

in spleen → Blood fiter of Arteriols



- open circulation : (venules) بطلع الدم لبرا على الـ (tissue) والدم بتجمع ويدخل على الـ

- closed circulation : (venules) و رجع بالـ (capillary) ← (arteriol) دخل الـ

Q the other name of endothelial cells lining of the splenic sinuses is ?

Sava Cells

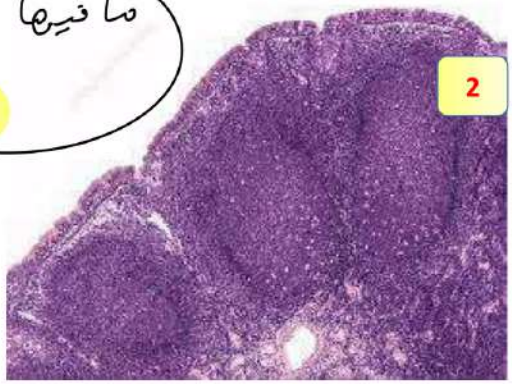
AL - 1

Pharyngeal Tonsil (1 and 2)

1. Notice the pseudostratified columnar epithelium covering the tonsil
2. Notice the presence of lymph nodules (The round structures)
3. Notice that there is no crypts

Crypts ما فيها

Q



لو سألت عنها بدون متفكر مادام شفت الـ(pithelium)

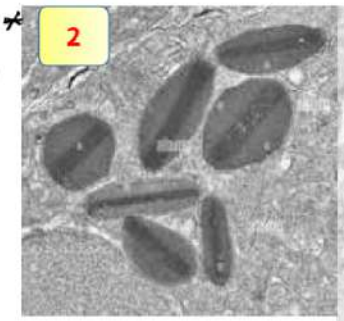
تاعها حتى لو متفرد بـ (Pharyngeal Tonsil)

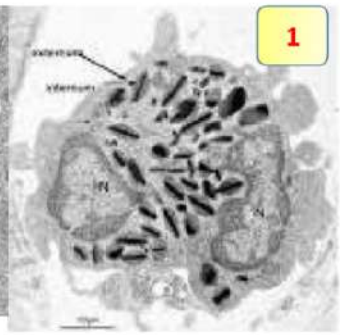
* ما في خلية بالجسم فيها (oval granules) بهذا الشكل غير (1/2) فهذا نعيز

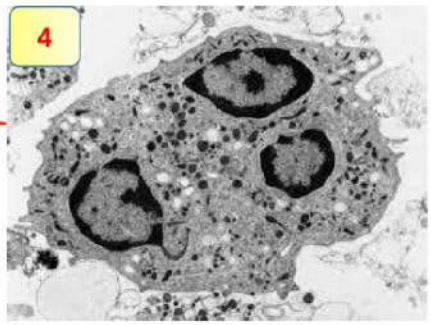
AL-1

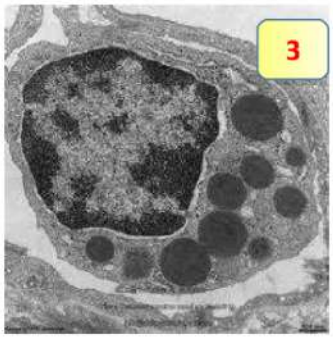
Electron micrographs of

1. Eosinophil
2. Specific granules of eosinophil
3. Basophil ما في خلية غير (3) أشكال وأحجام
4. Neutrophil خلايا ما معتنة فهذا التعيز
5. Compare the number and the size of the granules









* ما في خلية غير (4) فيها (Multible lobule) فهذا نعيز

Indications for Blood Cultures

M.L.1

- Presence of 2 or more of:

1. Core Temperature <36 or>38 hyper→hypo
2. Respiratory Rate >20 per min
3. WBC >12 or <4 x109 ↑wBCs → ↓wBCs
4. Pulse >90bpm
5. Altered mental state

الجدول الاول (sign) الطبيعية ما يتغيروا أنت بتحدد شو المشكلة

معلى WBC ↑ : غالبا virus ↑ Lympho —

Bacteria غالبا : ↑ Neutrophil

Clinical Picture of Septicemia

- Looks very ill-septic
- Hyperthermia/hypothermia (Fever — الوضع اصعب)
- Tackycardia
- Tackypnoea respiratory rate abnormal
- Septic shock-hypotension
- Multiorgan failure Late sign
- Fever of unknown origin
- Risk factors-intravenous catheter
- Clinical manifestation of source of infection: pneumonia, abscess, UTI, GE

M.L

إذا خضتهم تفكيرك رح يخاف

Bacteremia يروح

ال microorganism بتوصل للدم ومن هناك ممكن تروح لل organs لكن مرات بتشوف clinical picture تبعت ال source مثل ال abscess, UTI, pneumonia

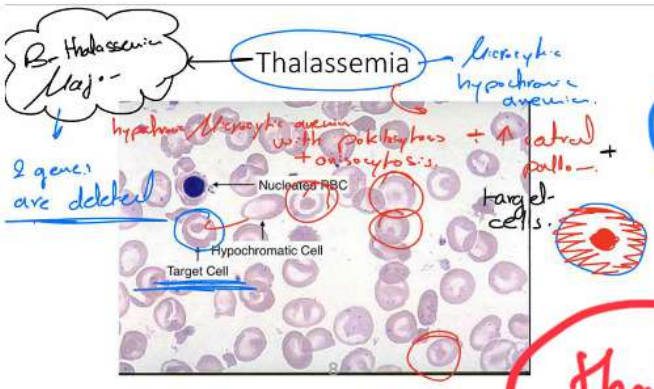
Causes of Bacteremia

- *S. aureus*
- *S. pyogenes*
- *S. pneumoniae*
- *H. influenzae*
- *Enterobacteriaceae*
- *Bacteroides*
- *Pseudomonas aeruginosa*
- *Candida species* : fungi

ML

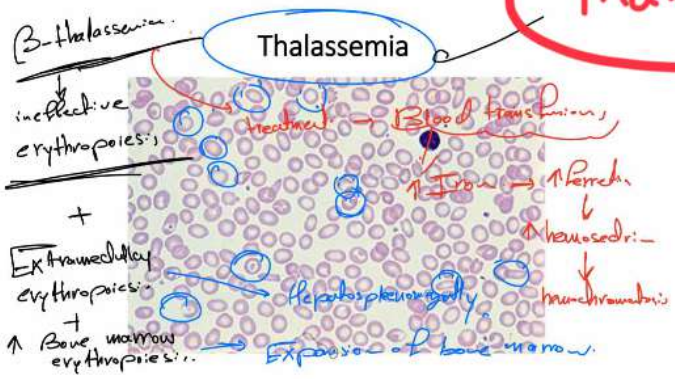
فإذا خفت الأعراض
فكر بهذول الأنواع
∴ امتحانة الاب للمايكروا
كلّه (cases)

وقل رب زدني علماً

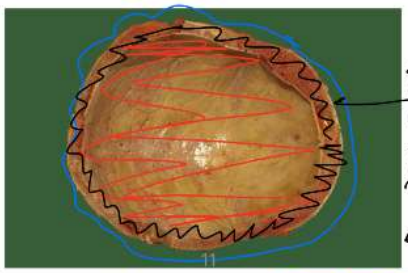


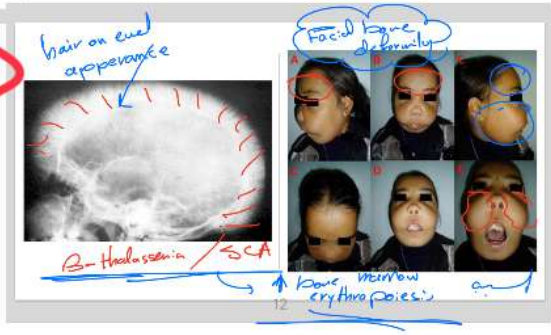
P.L.1

thalassemia

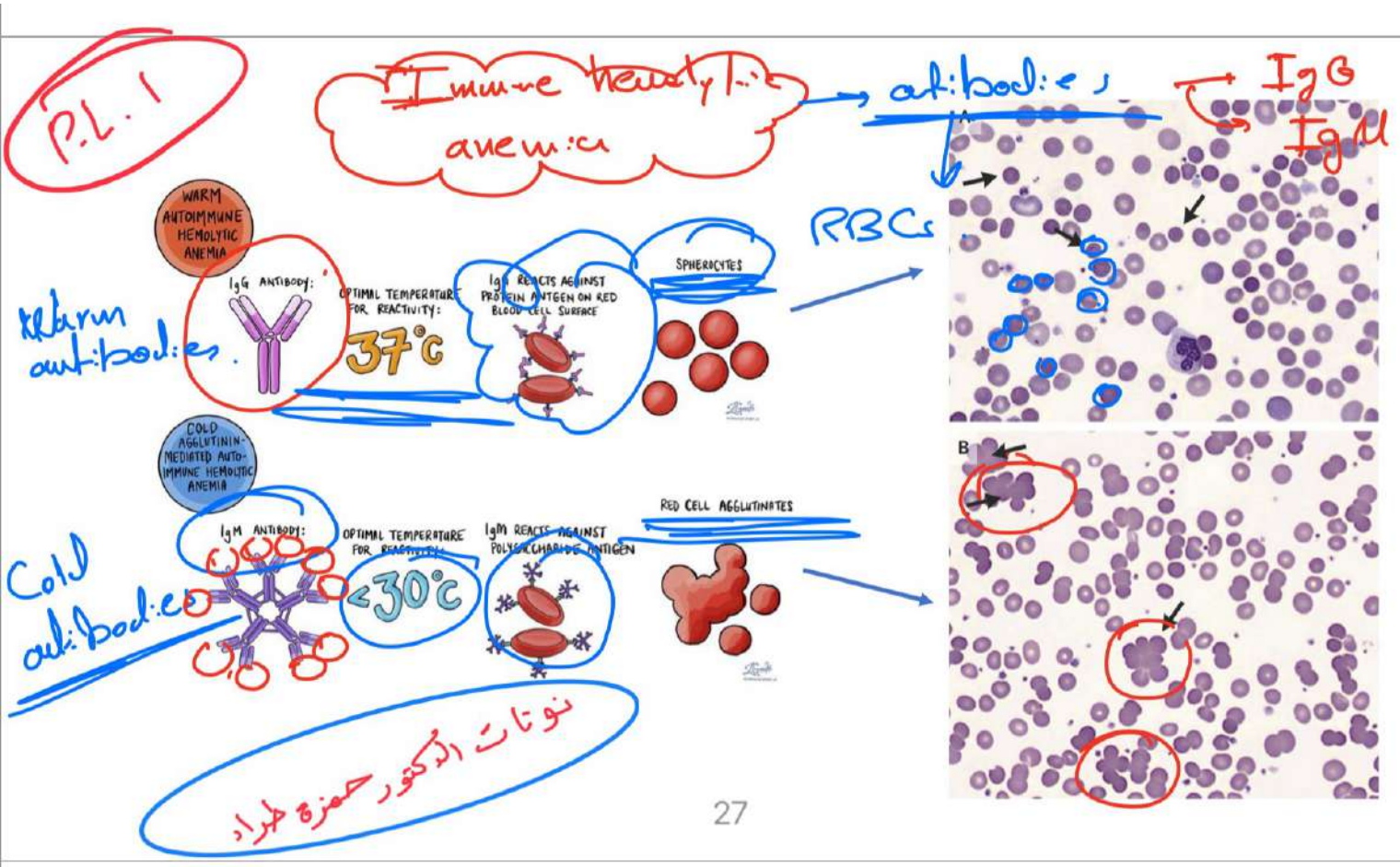


Severe, chronic anemias (such as thalassemias and sickle cell anemia) can increase the bone marrow response to form RBC's. This drive for erythropoiesis may increase the mass of marrow and lead to increase in marrow in places, such as the skull seen here, that is not normally found. Such an increase in marrow in skull may lead to "frontal bossing" or forehead prominence because of the skull shape change.





Secondary hemochromatosis in thalassemia major



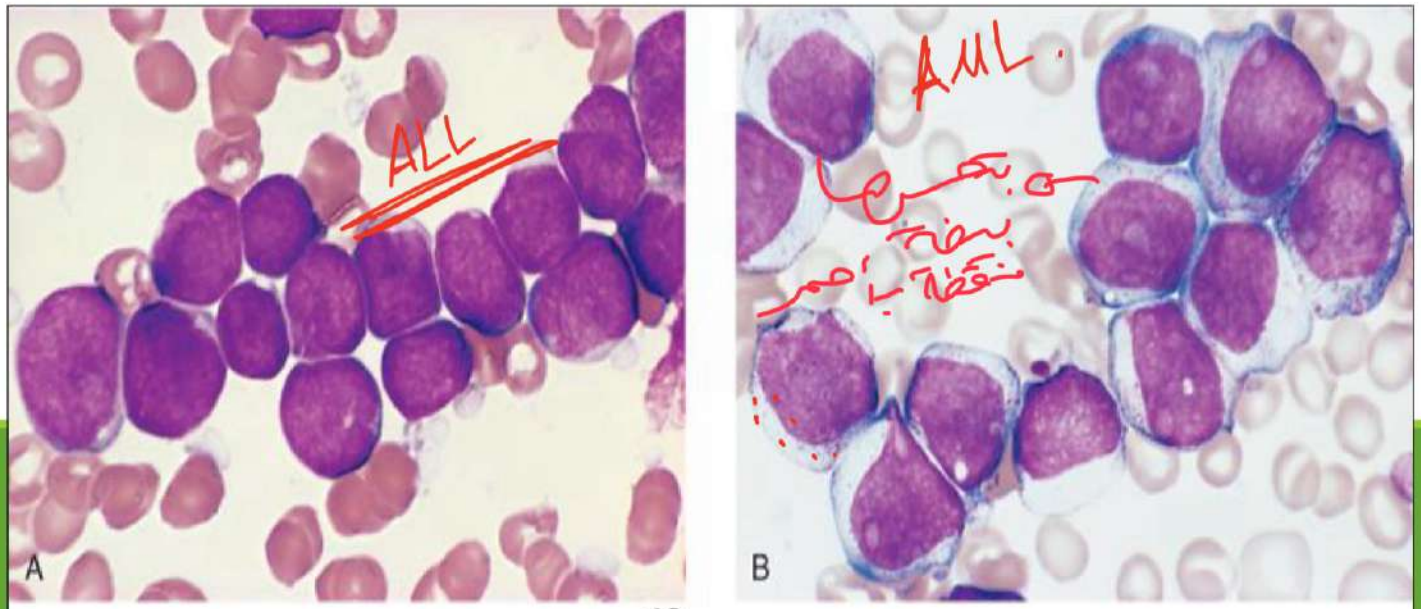
Warm Antibody: IgG/IgA type	Cold Antibody: IgM type
Activated at body temp. (37 c)	Active at 0-4°C IgM binds to RBC in cold temp (extremities)
IgG-coated RBC lysis in spleen (predominantly extravascular)	Clumping and complement fixation causes lysis in blood vessels and liver (intra- and extravascular)
Morphology: spherocytes (splenic macrophage phagocytose tagged RBC leading to formation of spherocytes)	IgM agglutination (hemolysis occurs in the hands & feet in cold weather)
80% of immune hemolytic anemias: Primary (50-70%) Secondary: - Lymphoproliferative disorders - Autoimmune diseases (SLE) - Drugs (penicillin and cephalosporins)	• Infectious mononucleosis (EBV) • Mycoplasma infection • Lymphoproliferative disorders

PL2

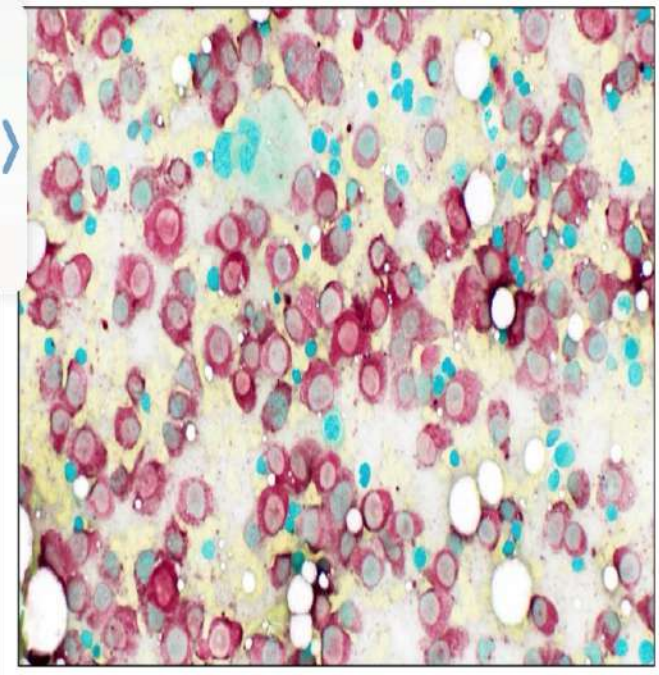
Morphologic comparison of lymphoblasts and myeloblasts.

A, Lymphoblastic leukemia/lymphoma. Lymphoblasts have fewer nucleoli than do myeloblasts, and the nuclear chromatin is more condensed. Cytoplasmic granules are absent.

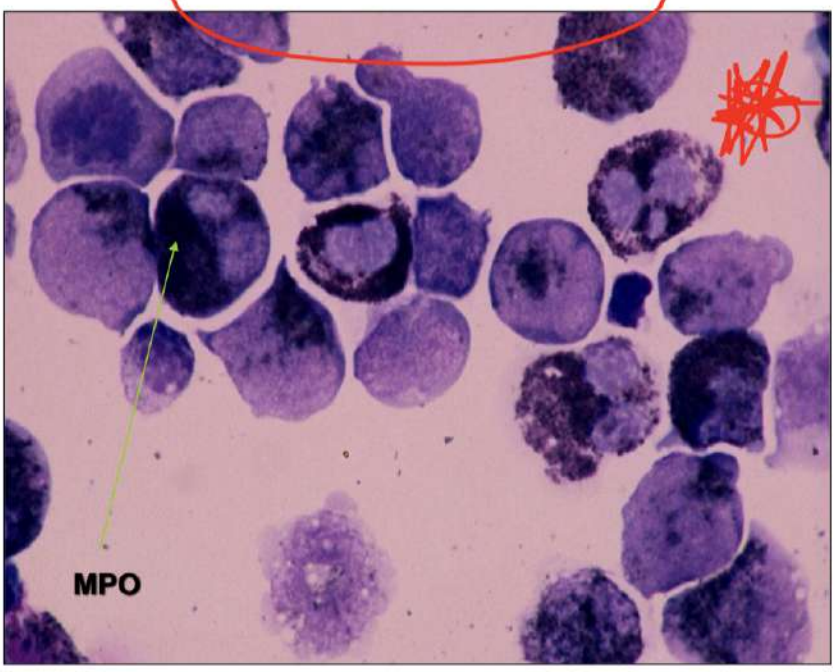
B, Acute myeloblastic leukemia (M1 subtype). Myeloblasts have delicate nuclear chromatin, prominent nucleoli, and fine azurophilic granules in the cytoplasm



NSE highlights blasts of monocytic origin



AML, MPO



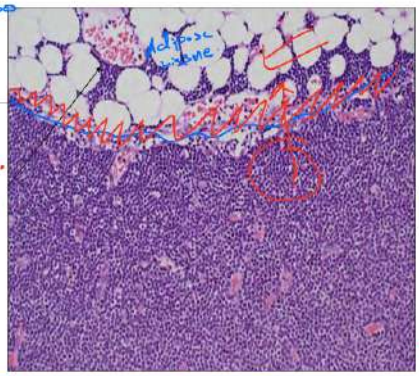
CLL → lymphocytes >5000

Small Lymphocytic Lymphoma, SLL → <5000

- The normal architecture of this lymph node is obliterated and is replaced by an infiltrate of small (mature-appearing) neoplastic lymphocytes. B lymphocytes

- The infiltrate extends through the capsule of the node and into the surrounding adipose tissue.

- This pattern of malignant lymphoma is diffuse.

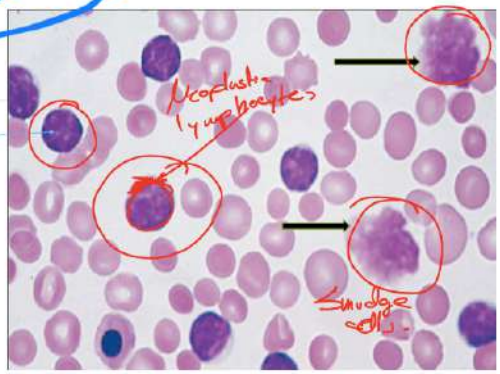


PL.2

SLL, Peripheral Smear

This peripheral blood smear is flooded with small lymphocytes with condensed chromatin and scant cytoplasm.

A characteristic finding is the presence of Smudge cells, two of which are present in this smear (arrows).

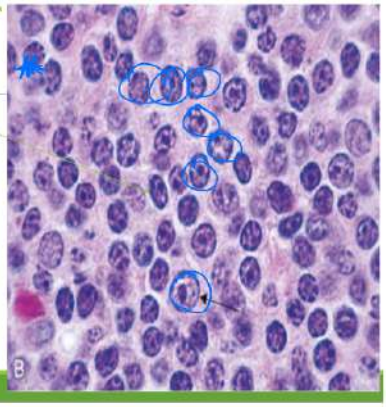


SLL

- At high power, most of the tumor cells have the appearance of small, round lymphocytes.

- A "prolymphocyte," a larger cell with a centrally placed nucleolus also is present in this field (arrow).

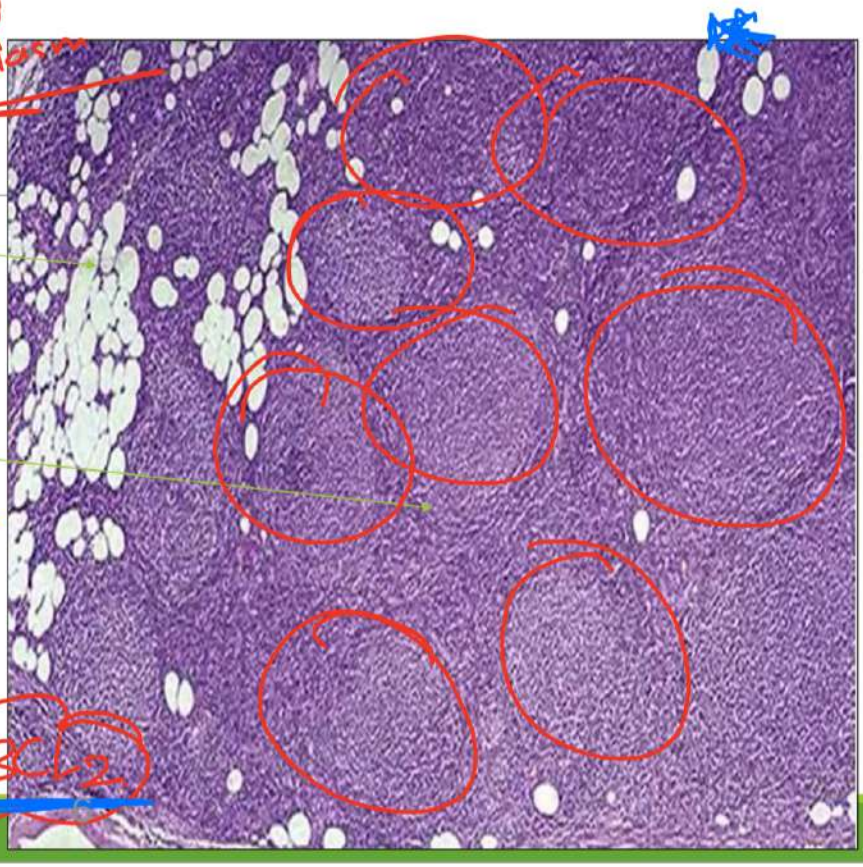
Soccer cells



Follicular Lymphoma, Microscopic

B-cell Neoplasm

- The capsule of this lymph node has been invaded, and lymphoma cells extend into the surrounding adipose tissue.
- The follicles are numerous, irregularly shaped and present throughout giving the **nodular appearance.**



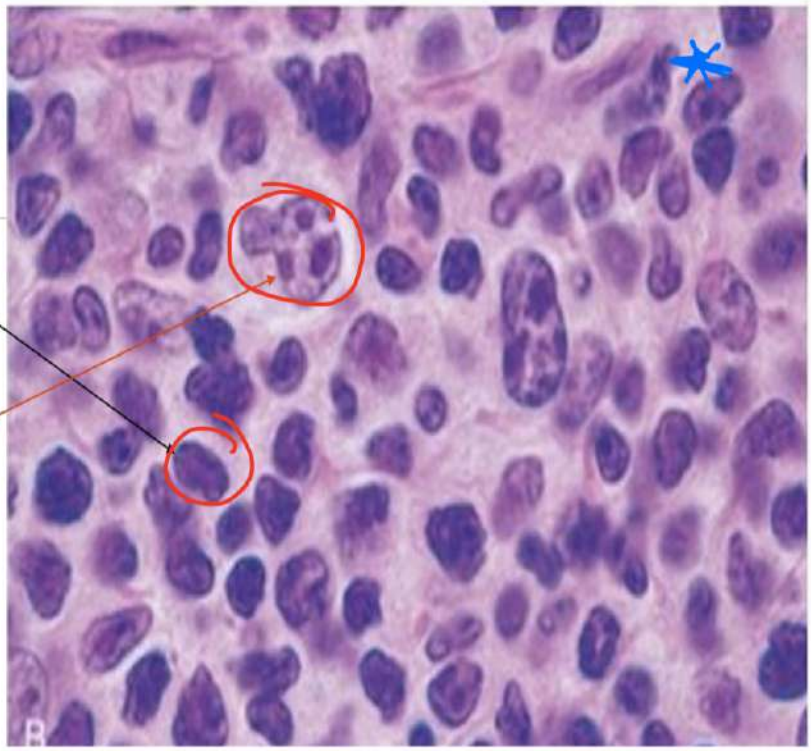
Most common presentation → Painless generalized lymphadenopathy.

Mutation → t(14;18) → ↑ BCL2

FL, Microscopic

Note the presenceof 2 types of cells:

- Centrocytes: Smalland cleaved with dense chromatin.
- Centroblasts: Large with fine chromatin and prominent nucleoli.



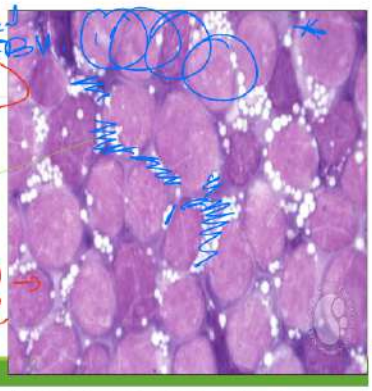
PL.2

PL.2

Burkitt Lymphoma, Smear

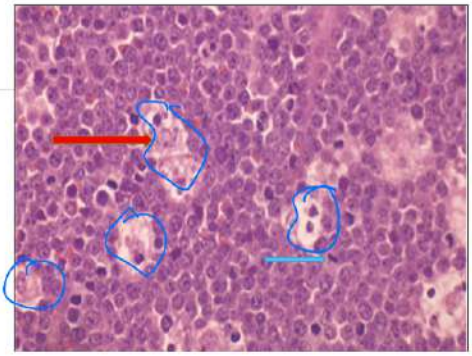
- The tumor cells are uniform and intermediate in size and typically have round or oval nuclei with 2-5 distinct nucleoli.

- There is a moderate amount of basophilic or amphophilic cytoplasm that often contains small, lipid-filled vacuoles (a feature appreciated on smears).



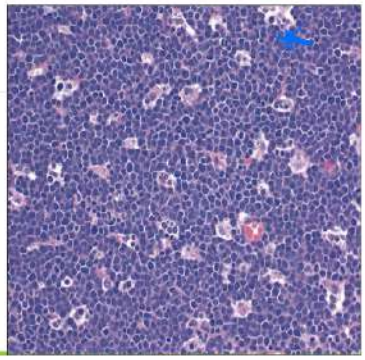
Burkitt Lymphoma

Diffuse sheets of medium-sized neoplastic Lymphocytes with abundant mitosis and apoptotic bodies beside tingible body macrophages.



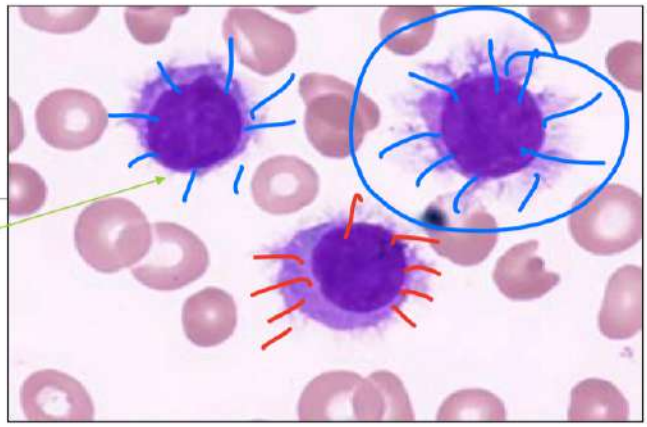
Burkitt Lymphoma

- Starry sky appearance

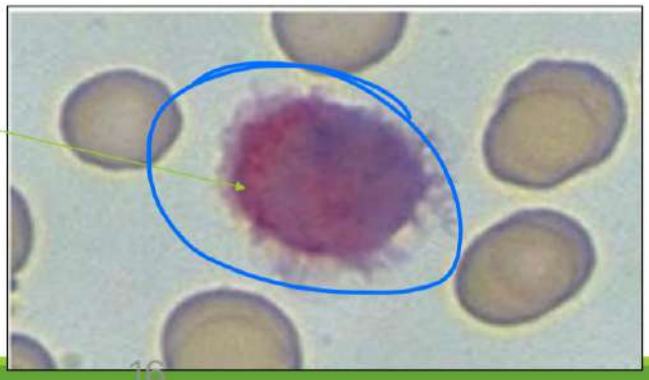


Hairy Cell Leukemia

- peripheral bloodsmears shows abnormal lymphocytes with indistinct cytoplasmic borders and surface projections, giving the cells a "hairy" appearance.

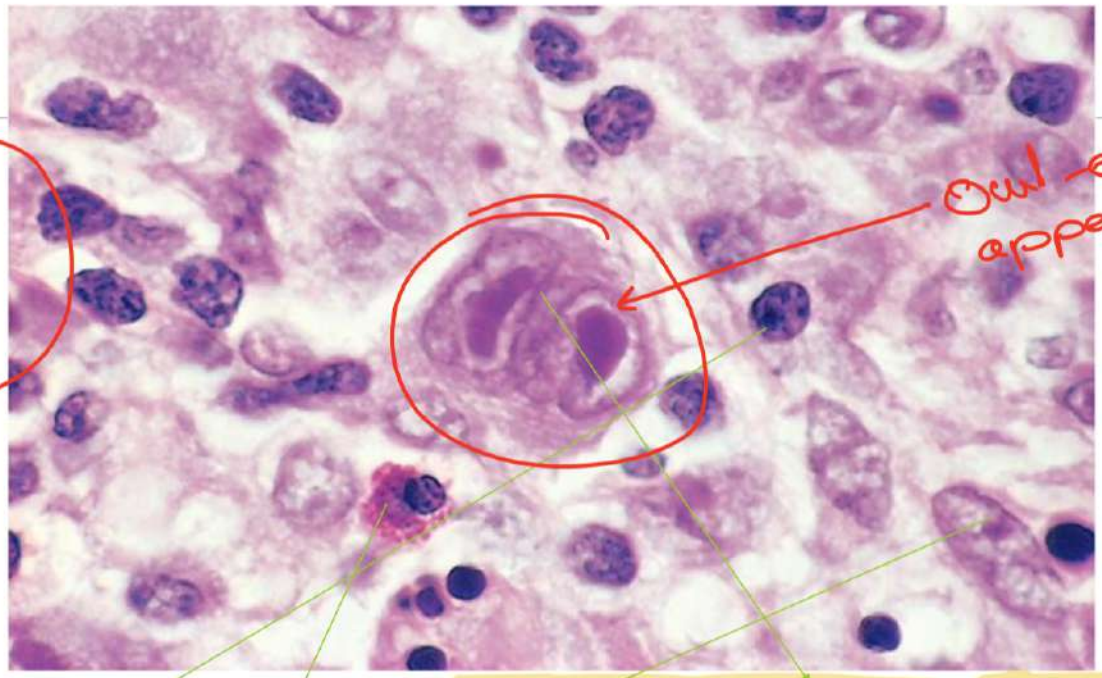


- The red cytoplasmic staining seen at the lower right is tartrate-resistant acid phosphatase (**TRAP**) positivity



PL. 2

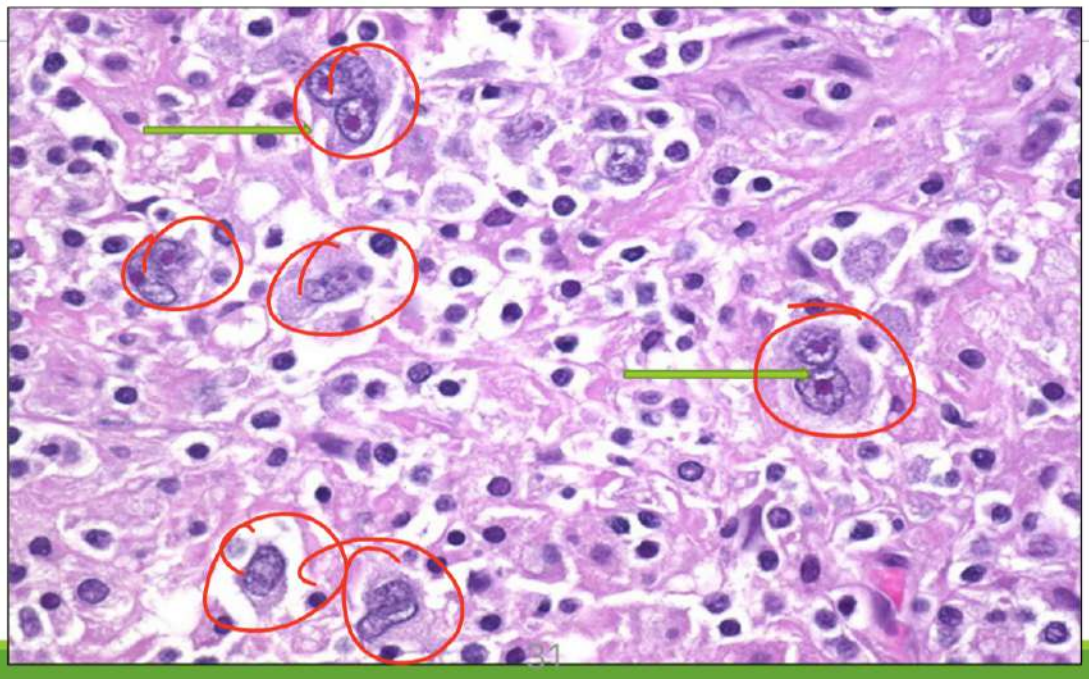
Hodgkin Lymphoma (HL), Microscopic



Hodgkin's Lymphoma:showing classic Reed- Sternberg cell (RS), lymphocytes, eosinophil & histiocytes

PL. 2

HL, RS, Microscopic



NLPHL, Nodular Lymphocyte predominant (NLPHL)

PL.2

The large neoplastic cells, known as lymphocyte-predominant (LP) cells **(lymphohistiocytic (L&H))** (white open arrow), often have multilobated nuclear contours and **resemble popcorn**.