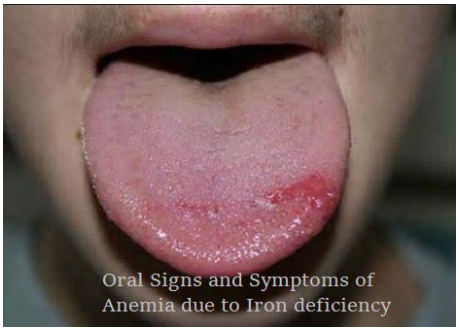
Disclaimer: This summary is meant to be for the Lab pictures only; so it contains very little details about the disease itself, to make it easier study each case and come look at the pictures after.

Lecture 1 + 2

1- Iron Deficiency Anemia

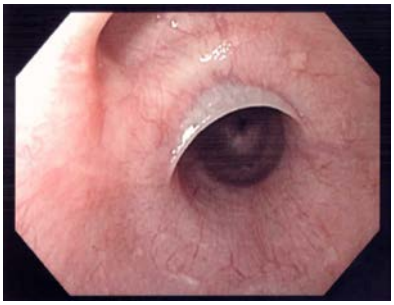
*Clinical Findings:

1. Glossitis



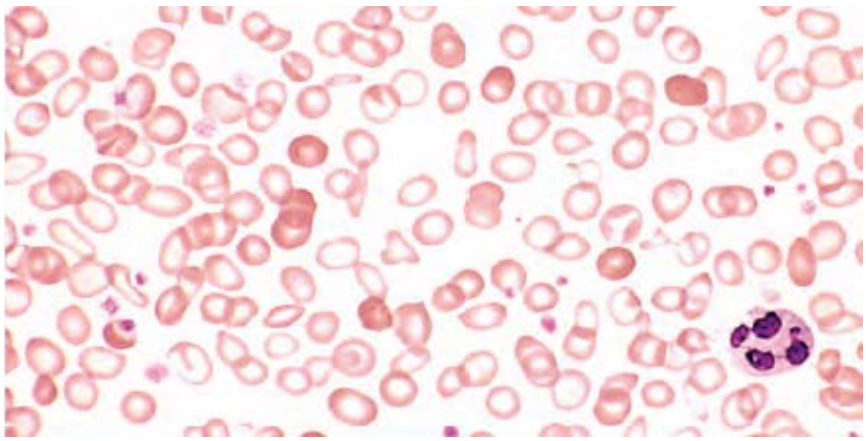
2. Spooning of the fingernails

3. Esophageal web

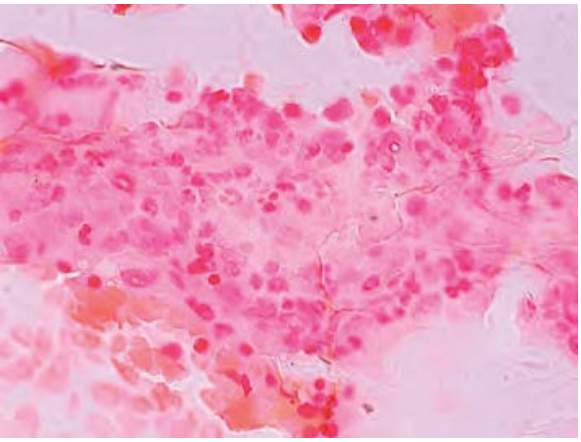


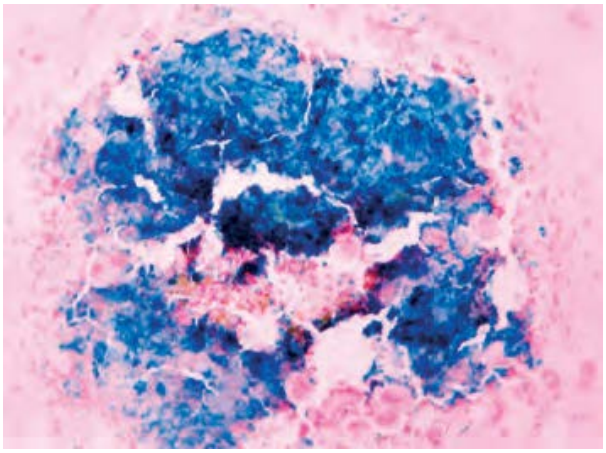
*Laboratory Findings:

1. Microcytic (small) Hypochromic (pale rom the center) RBCs



2. Low Iron levels

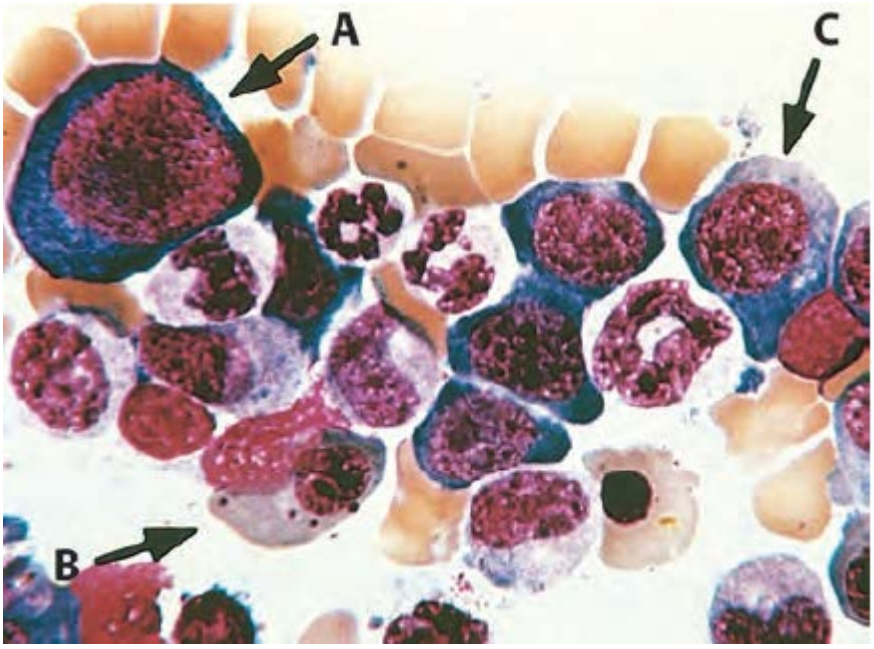




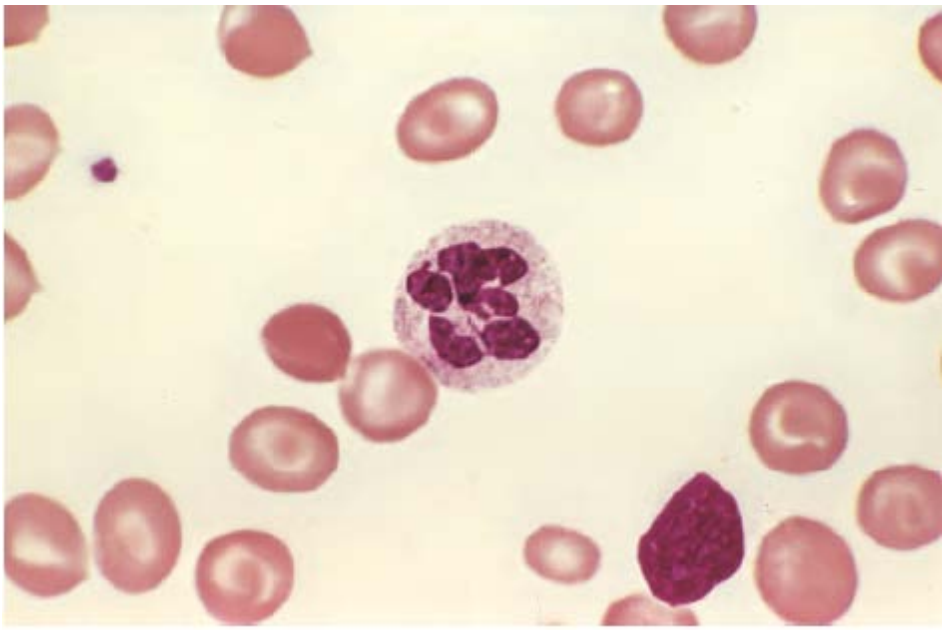
The left image shows a completely iron depleted bone marrow. The lower right image depicts a normal bone marrow with normal iron (blue).

2- Megaloblastic Anemia

1. Nuclear-cytoplasmic asynchrony; the erythroid precursor cells are larger than normal and show immature nuclei, however, the cytoplasm shows normal maturation.

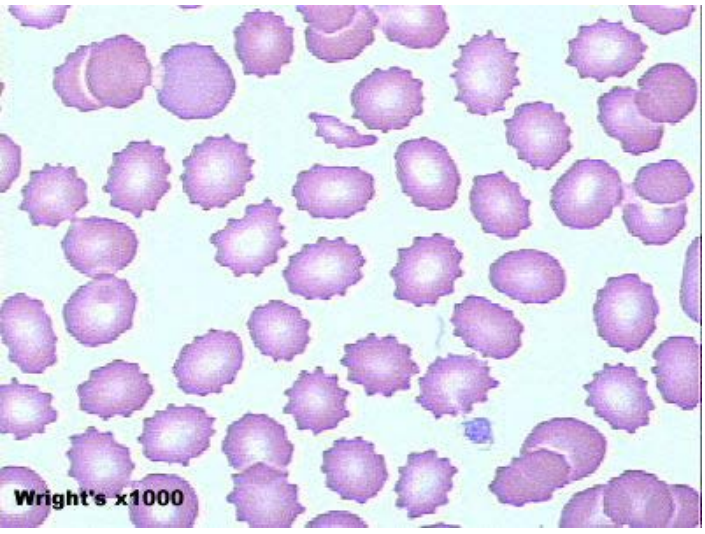


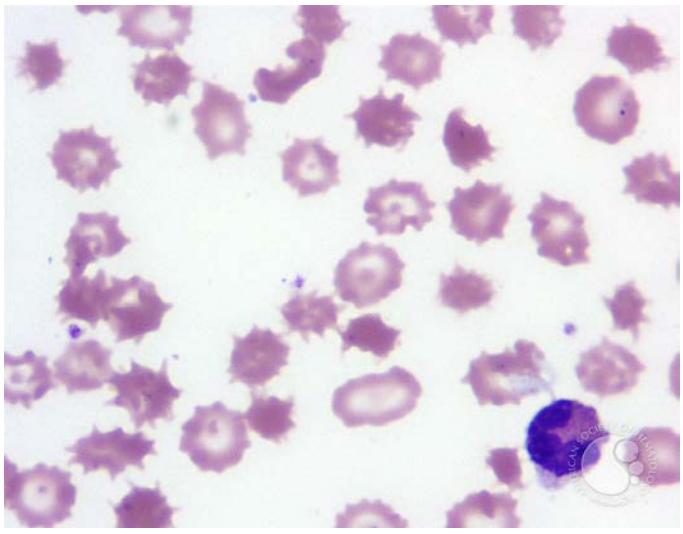
2. Hypersegmented neutrophils (neutrophils with nuclei showing more than 4 segments)



3- Anemia of Chronic Liver Disease

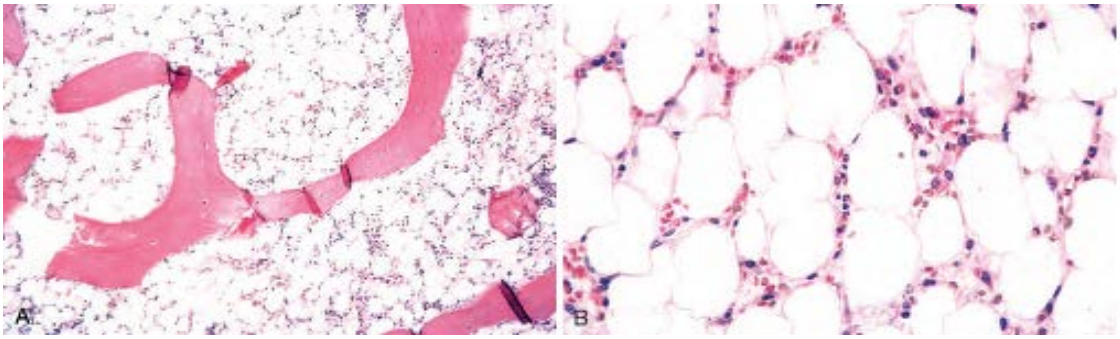
Characterized by presence of spur cells (also known as acanthocytes) which are large erythrocytes covered with spike-like projections that vary in width, length, and distribution.





4- Aplastic Anemia

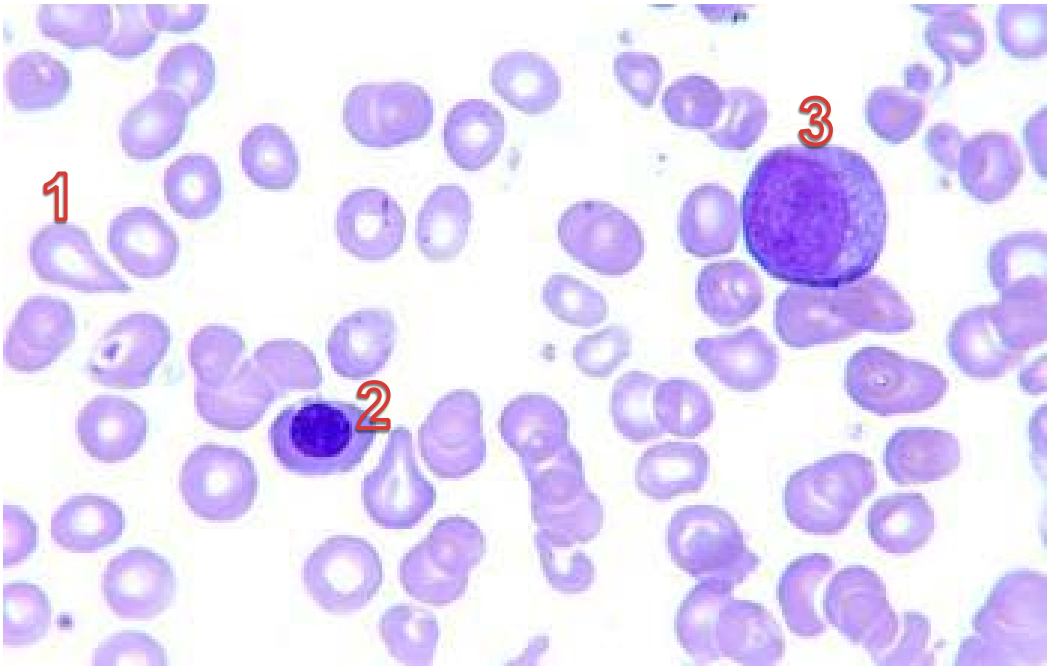
The bone marrow is completely devoid of hematopoietic cells and is filled with <u>adipose tissue</u> instead.



(adipose tissue in the bone marrow, again)

5- Myelophthitic Anemia

Characterized by misshapen red cells, some resembling teardrops, immature granulocytic and erythrocytic precursors also may be present too.



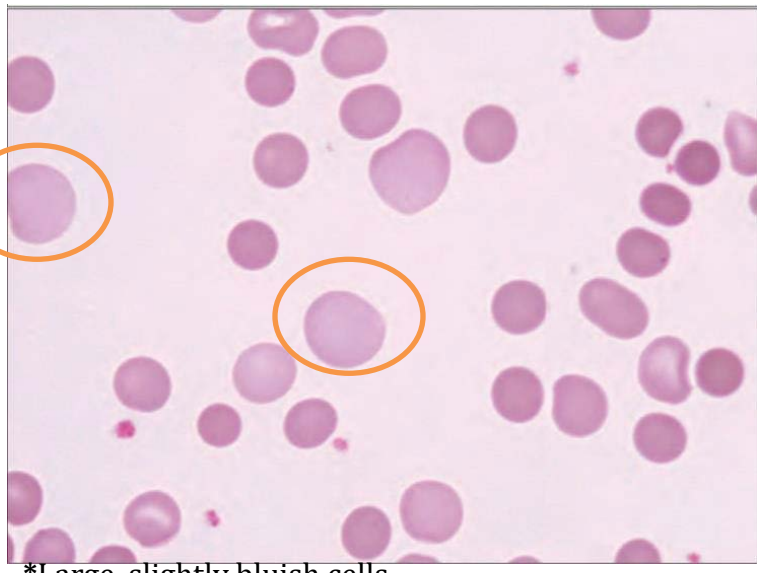
1-tear drop RBC
2-immature erythroid precursor cell (the one with the nucleus)
3-immature myeloid cell

Lecture 3

1- Hemolysis

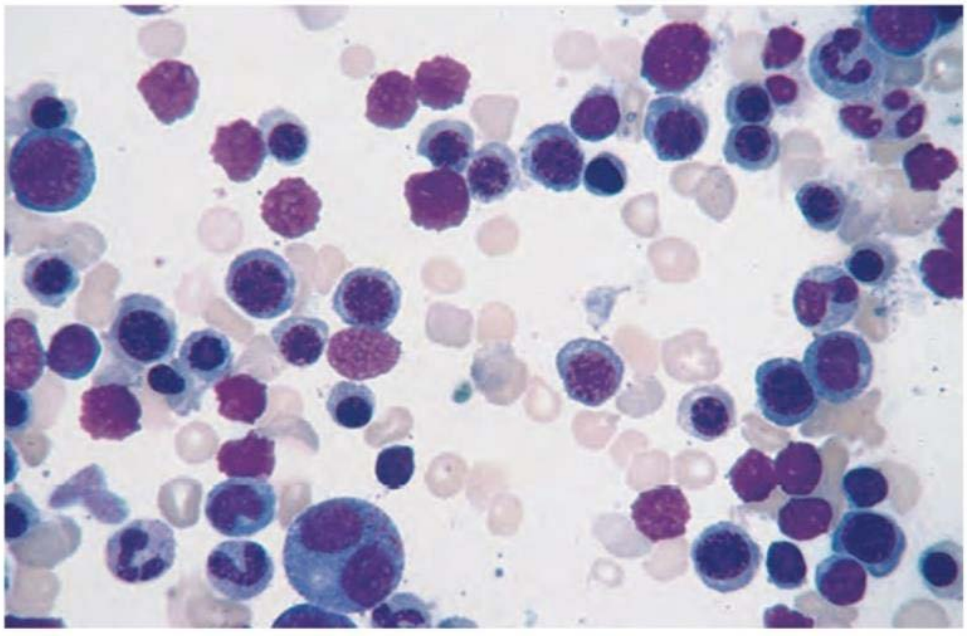
Characterized by:

1. High reticulocyte count

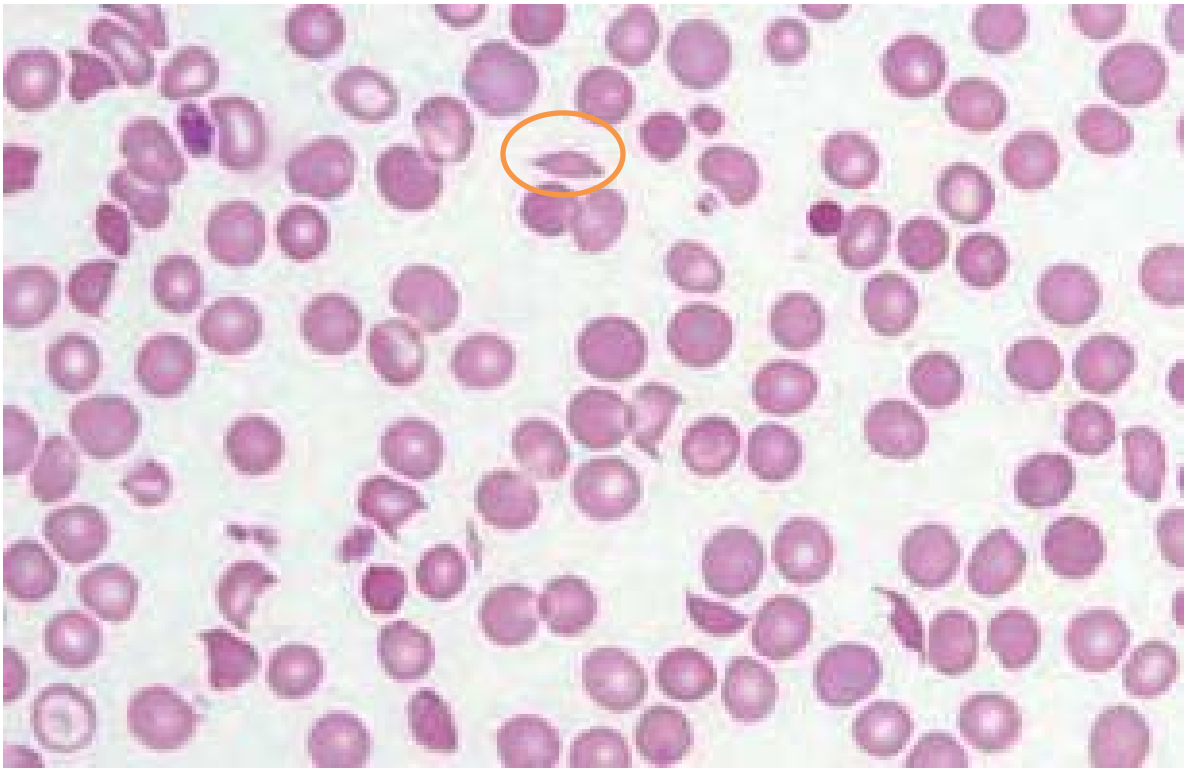


*Large, slightly bluish cells

2. Erythroid precursor cells hyperplasia

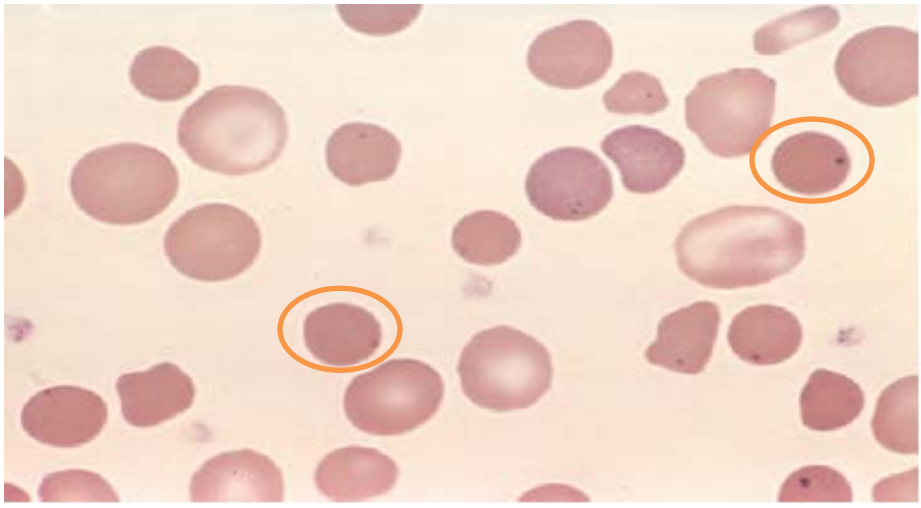


➔ Schistocytes is a torn RBCs with a helmet shape, associated with some parasitic infections such as Malaria and babesia. (note from the sheet: Schistocyte is a marker of intravascular hemolysis and is not specific for a single cause of hemolysis)

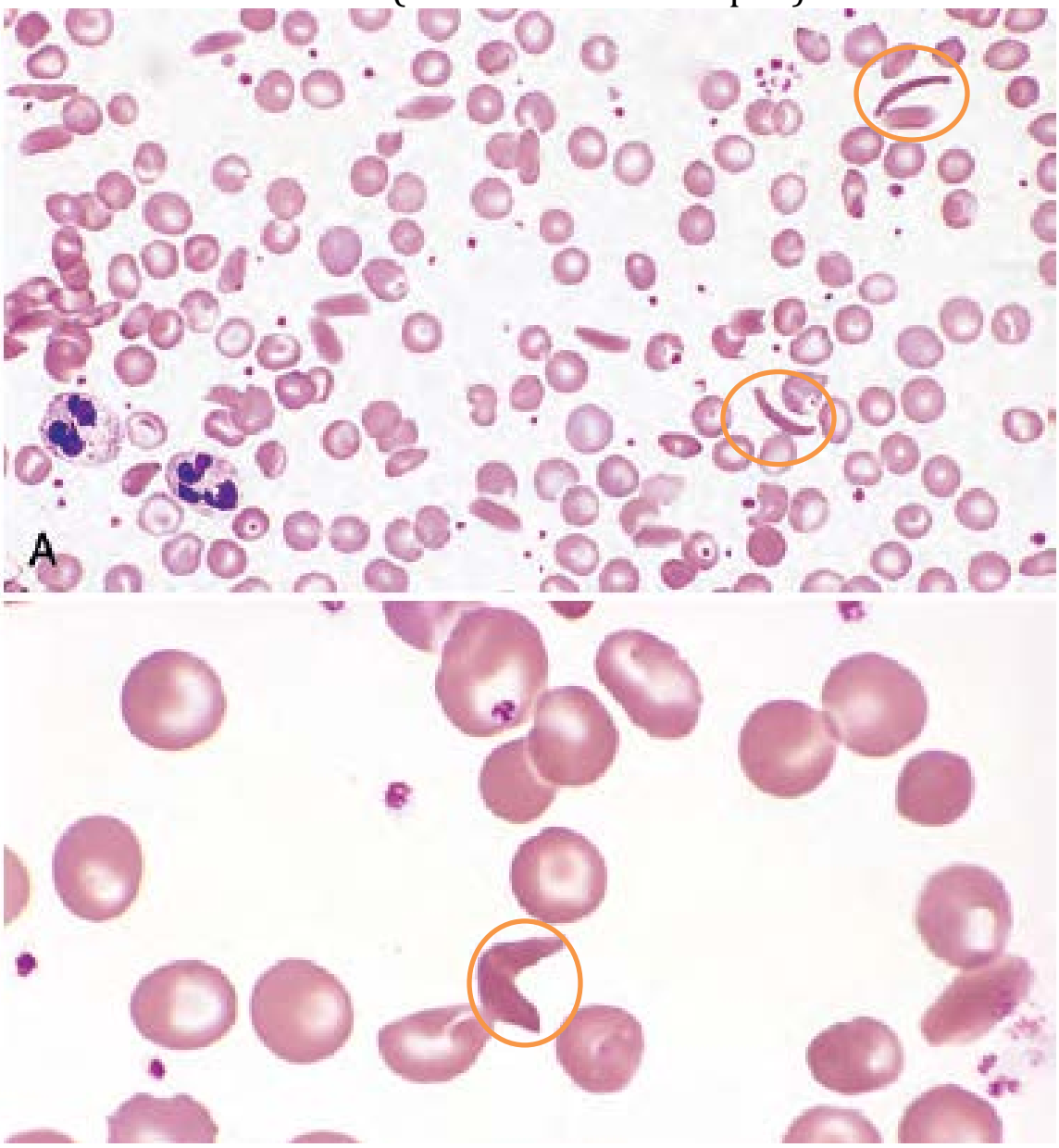


Lecture 4

1- Spherocytosis



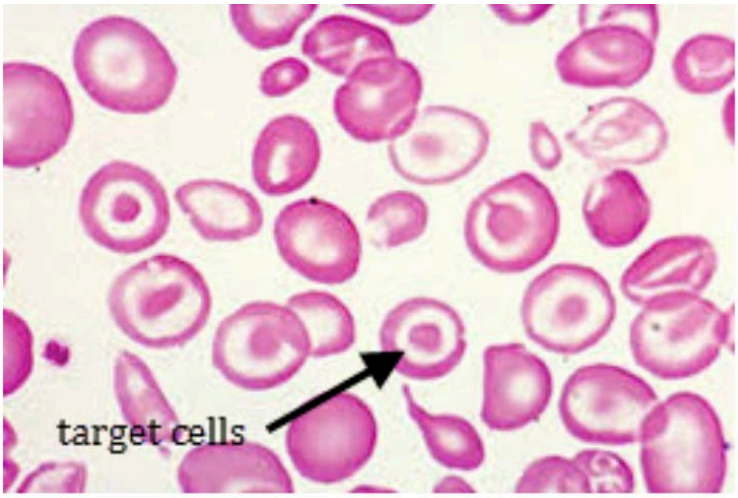
2- Sickle cell anemia (RBCs are sickle shaped)



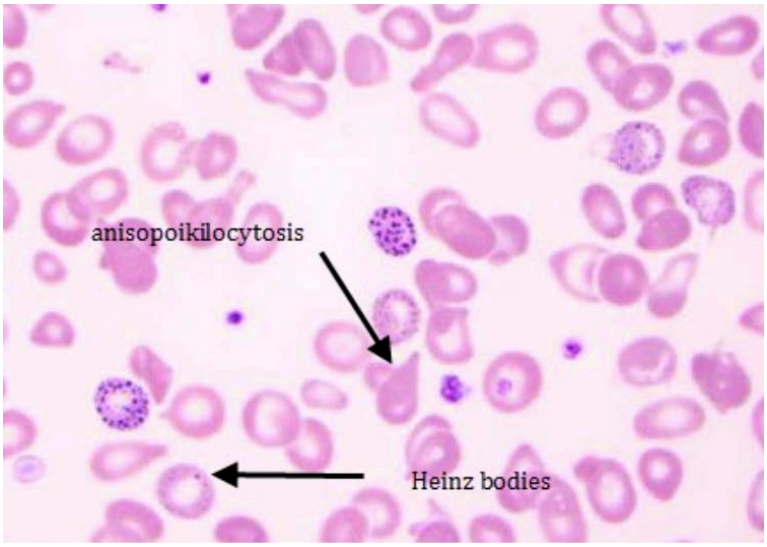
3- B-Thalassemia Major

Morphology:

1. Target Cells

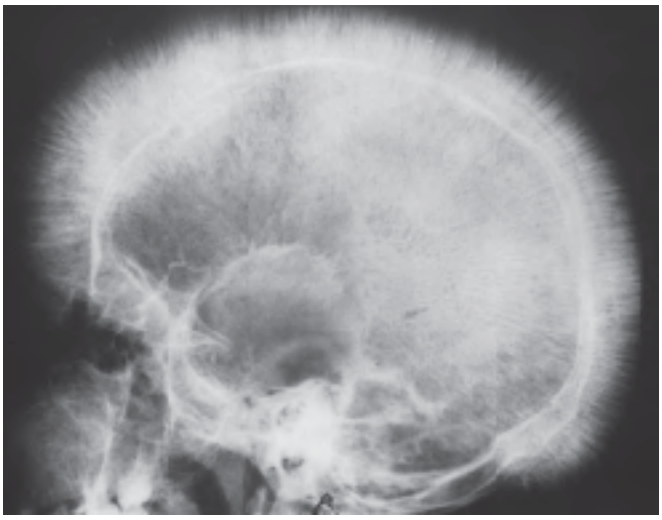


2. Heinz Bodies (inclusions within red blood cells composed of denatured hemoglobin)



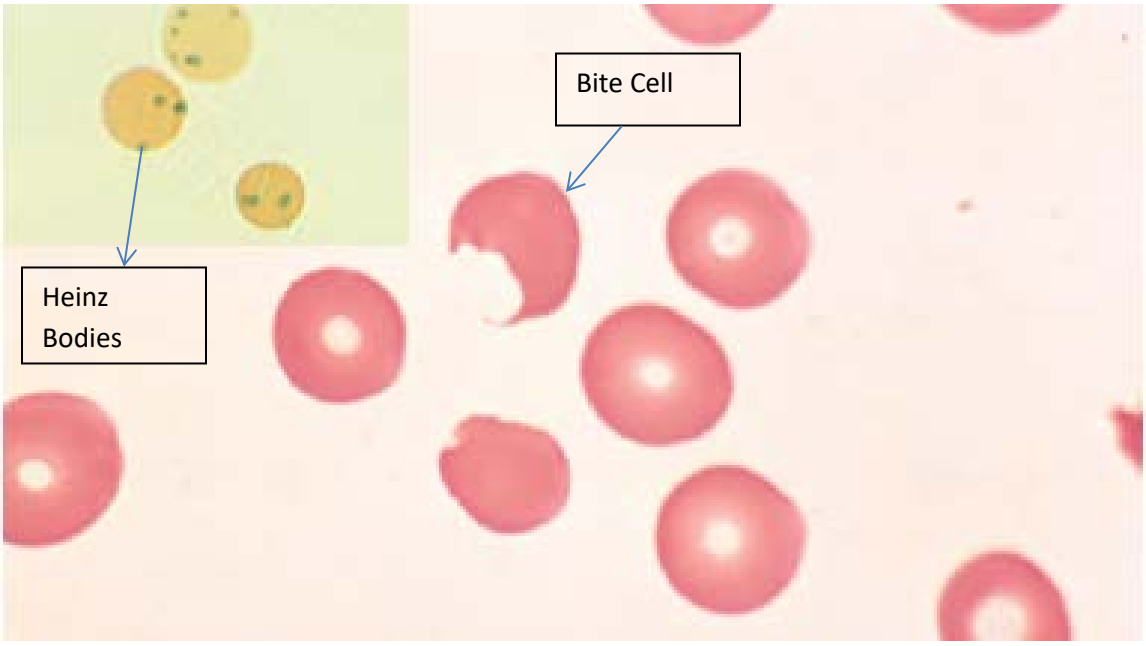
3. X-ray of the skull shows perpendicular radiations resembling a crew-cut).

(الأشياء اللي زي الشعرات)



4- Glucose 6-phosphate dehydrogenase (G6PD) deficiency

1. Heinz bodies (crystal violate stain)
2. Bite Cells (forms when cells try to pluck out Heinz bodies)

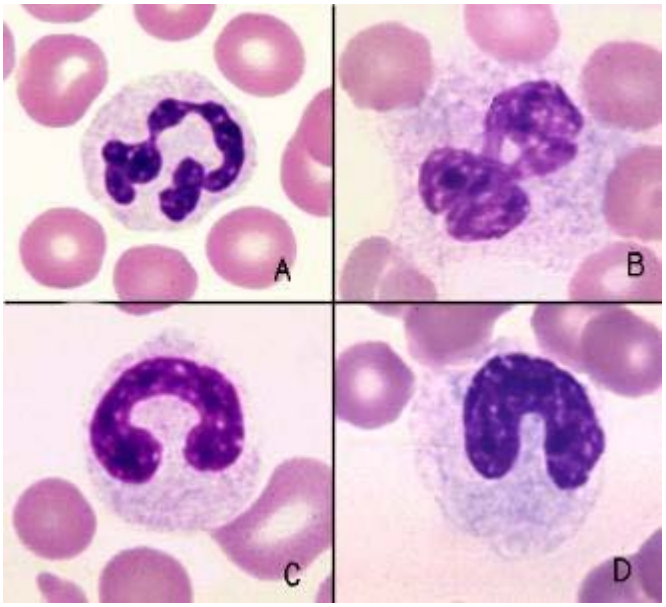


Lecture 6 (خمسة ما فيه صور)

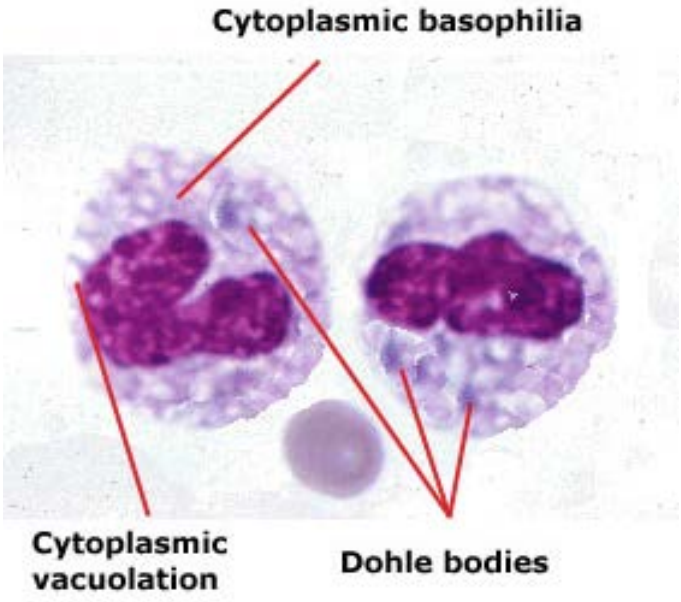
1- Neutrophilia

Morphology:

1. Toxic Granulation (cytoplasm appear granulated)

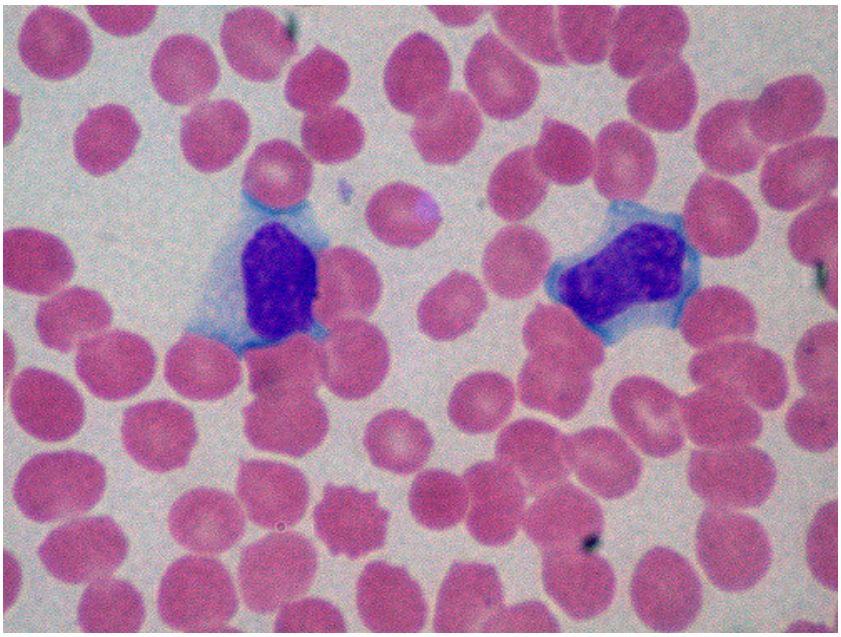


2. Cytoplasmic basophilia
3. Vacuolization of the cytoplasm
4. Döhle bodies

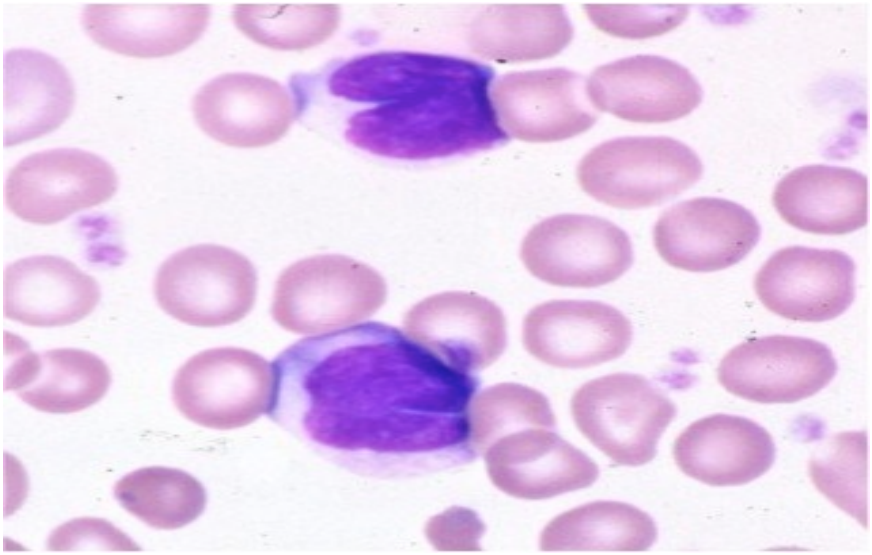


2- Lymphocytosis

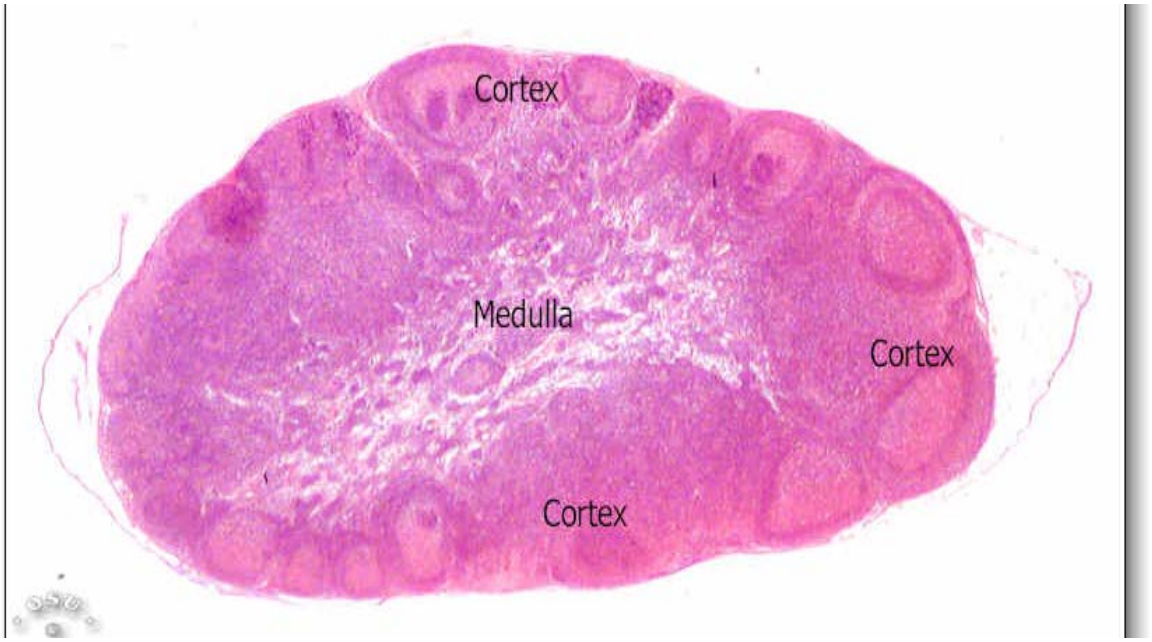
2.1 Infectious mononucleosis (atypical lymphocyte with abundant cytoplasm (somehow the cytoplasm looks like a skirt ☺))



2.2 Pertussis (whooping cough) -> a lymphocytosis; so it has almost the same look



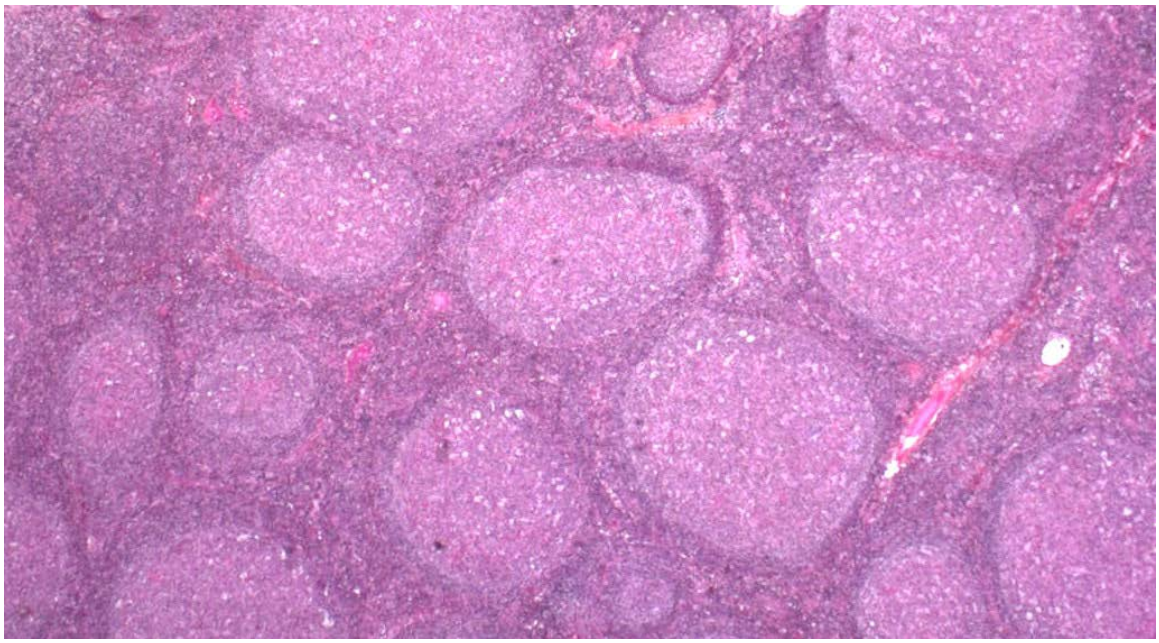
3- Histology of the lymph node



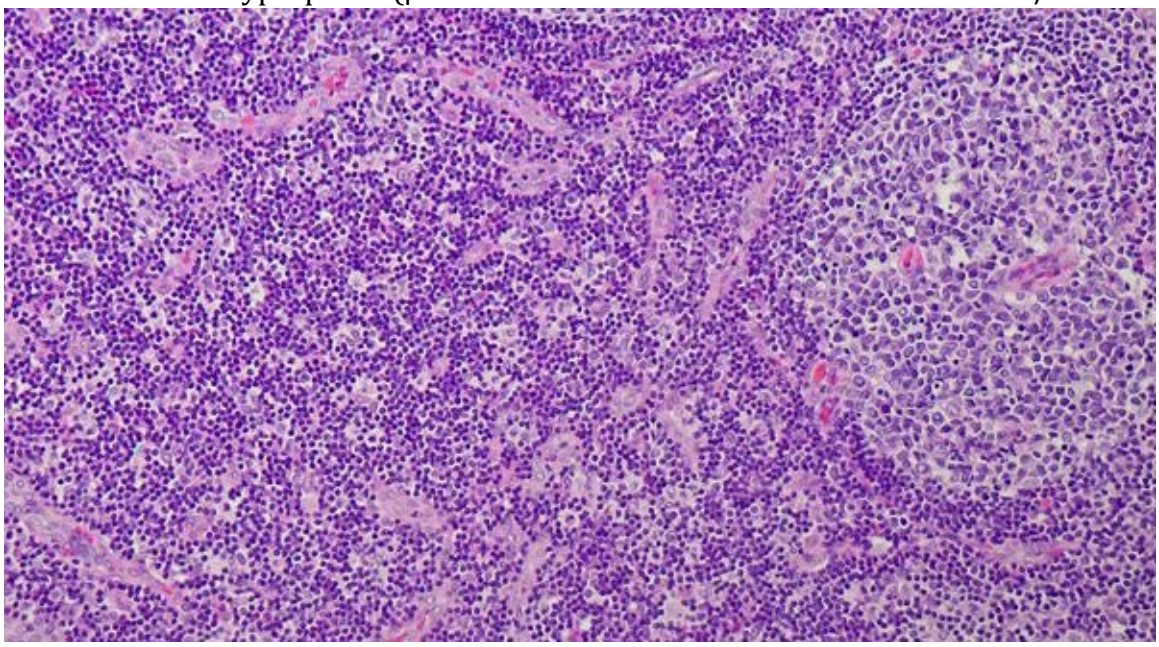
4- Chronic Nonspecific Lymphadenitis

It assumes three patterns:

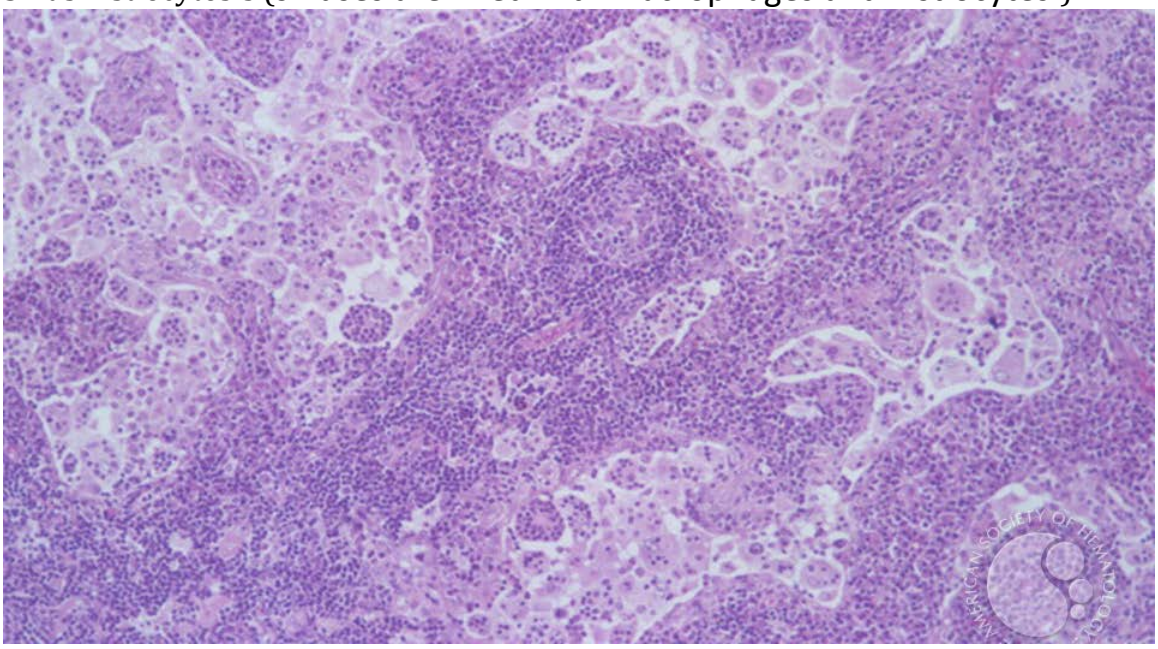
a. Follicular hyperplasia (not to be confused with follicular lymphoma, here node architecture is preserved and the germinal centers varies in the shape and size)



b. Paracortical hyperplasia (proliferation of T-cells in the interfollicular areas)



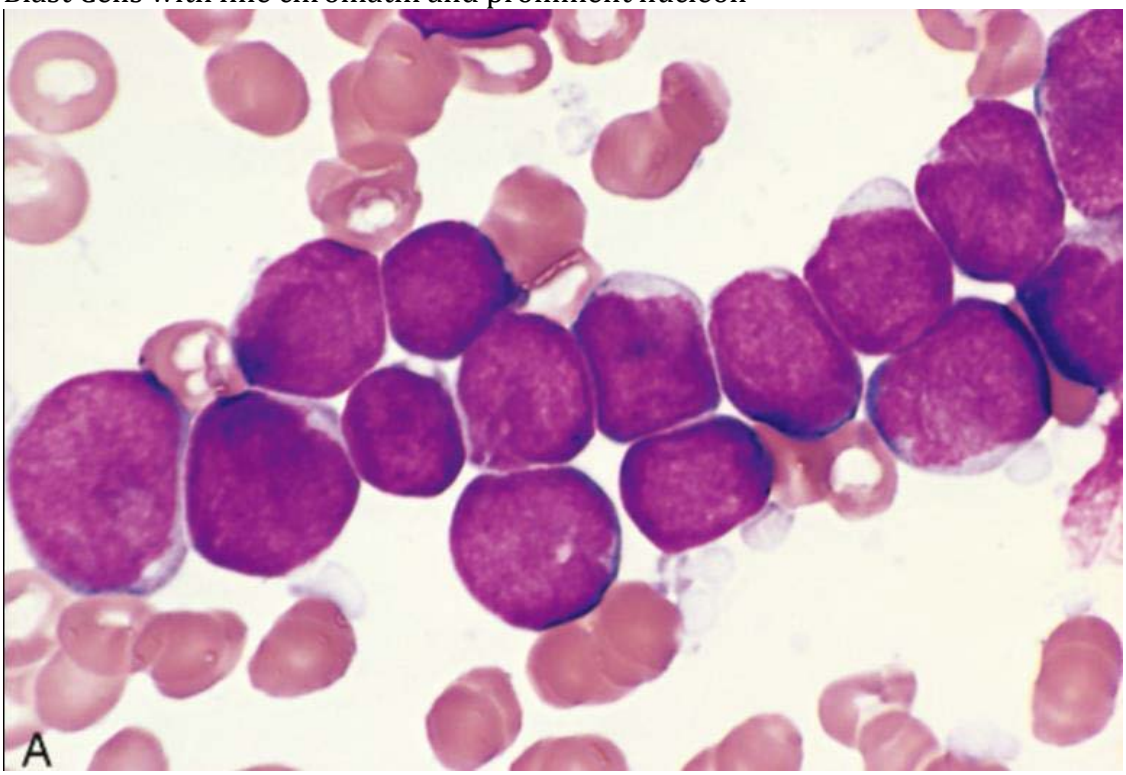
c. Sinus histiocytosis (sinuses are filled with macrophages and histiocytes.)



Lecture 7

1- Acute Lymphoblastic Leukemia

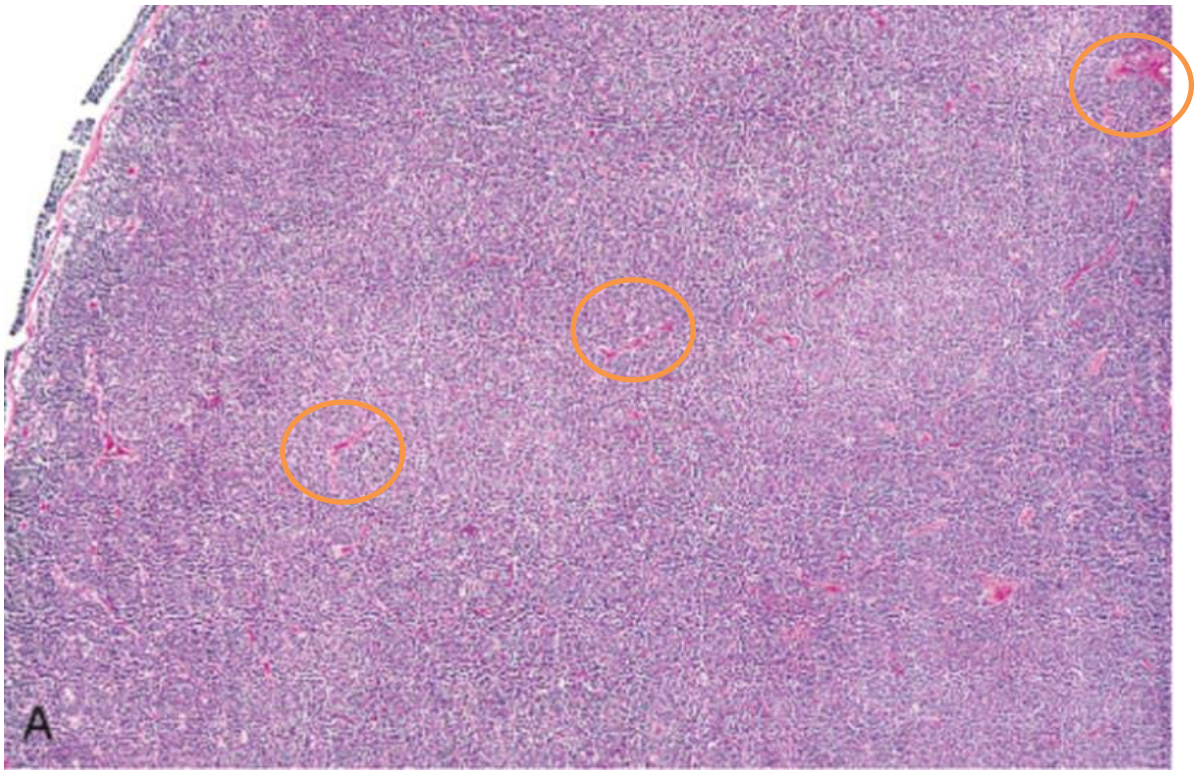
Blast Cells with fine chromatin and prominent nucleoli



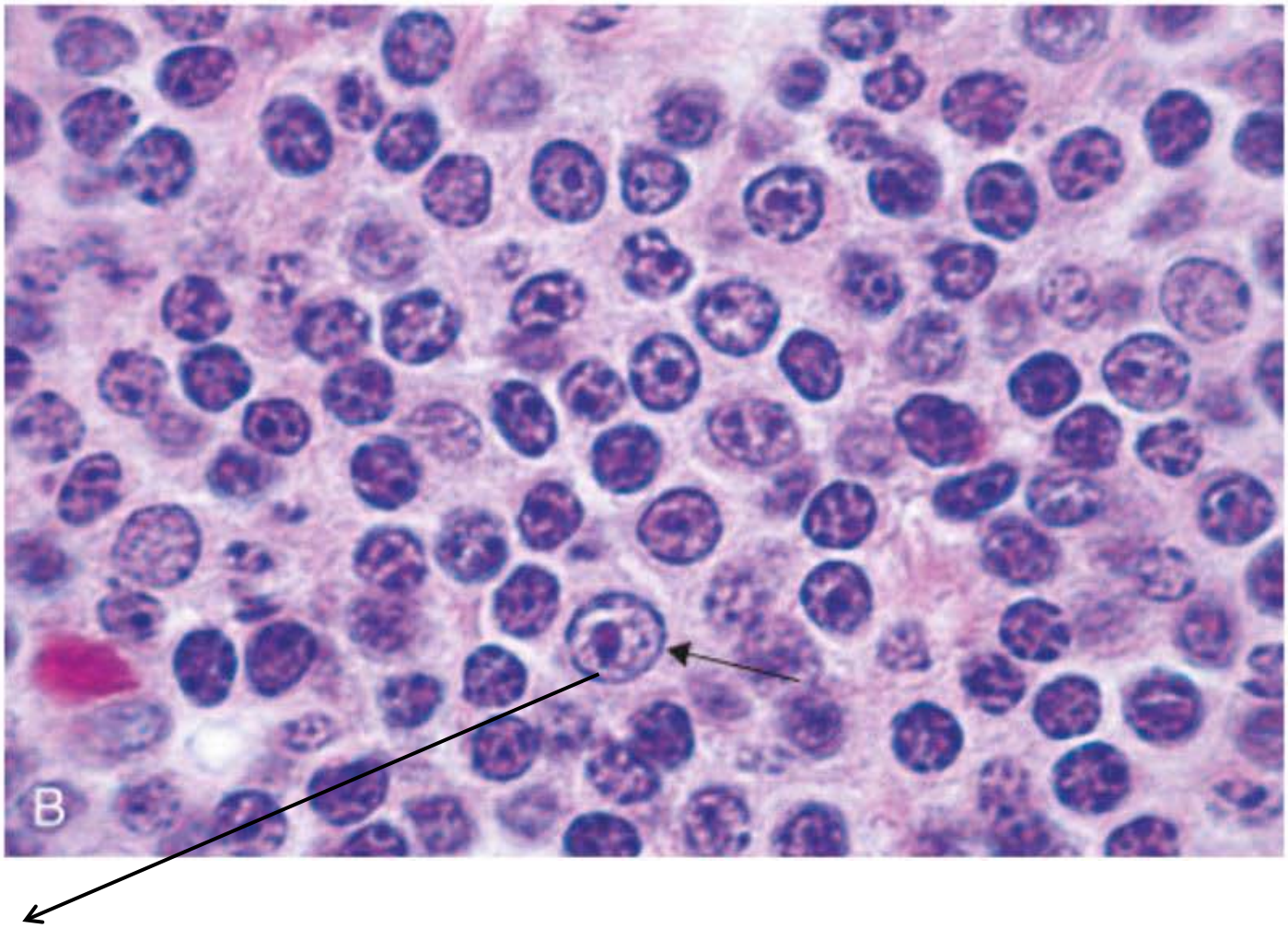
2- Chronic Lymphocytic Leukemia & SLL

Morphology:

1. Sheets of lymphocytes within the lymph node

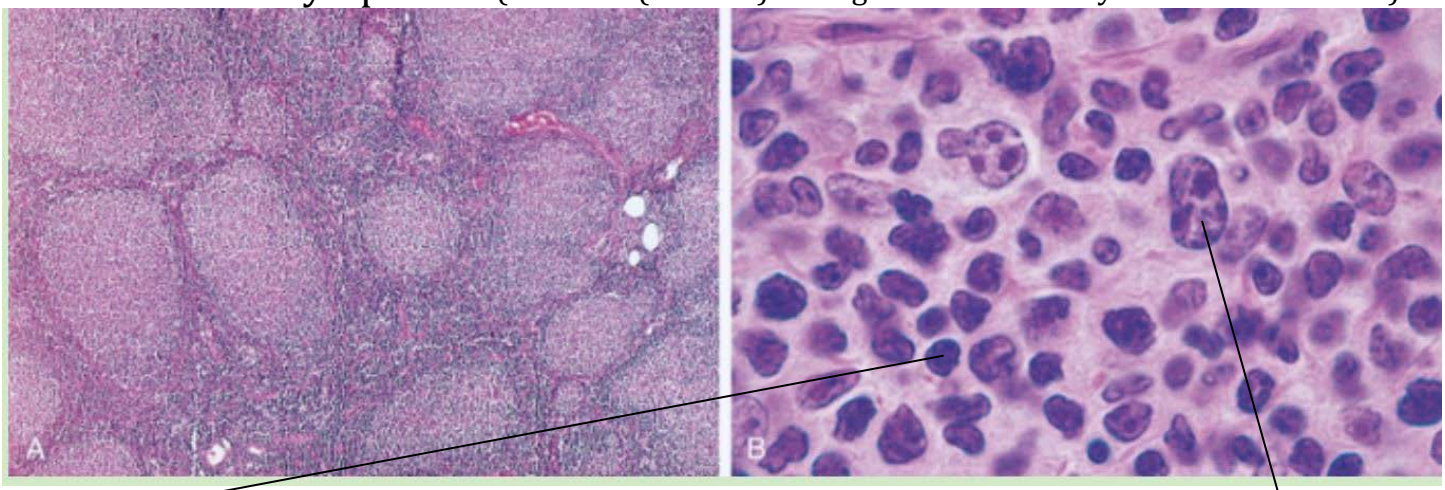


2. Small mature lymphocytes that appear like normal lymphocytes with dense chromatin and small nucleoli



A small percentage of lymphocytes show prominent nucleoli, called **Prolymphocytes.**

3- Follicular Lymphoma (follicular (nodular) arrangement of centrocytes and centroblasts)



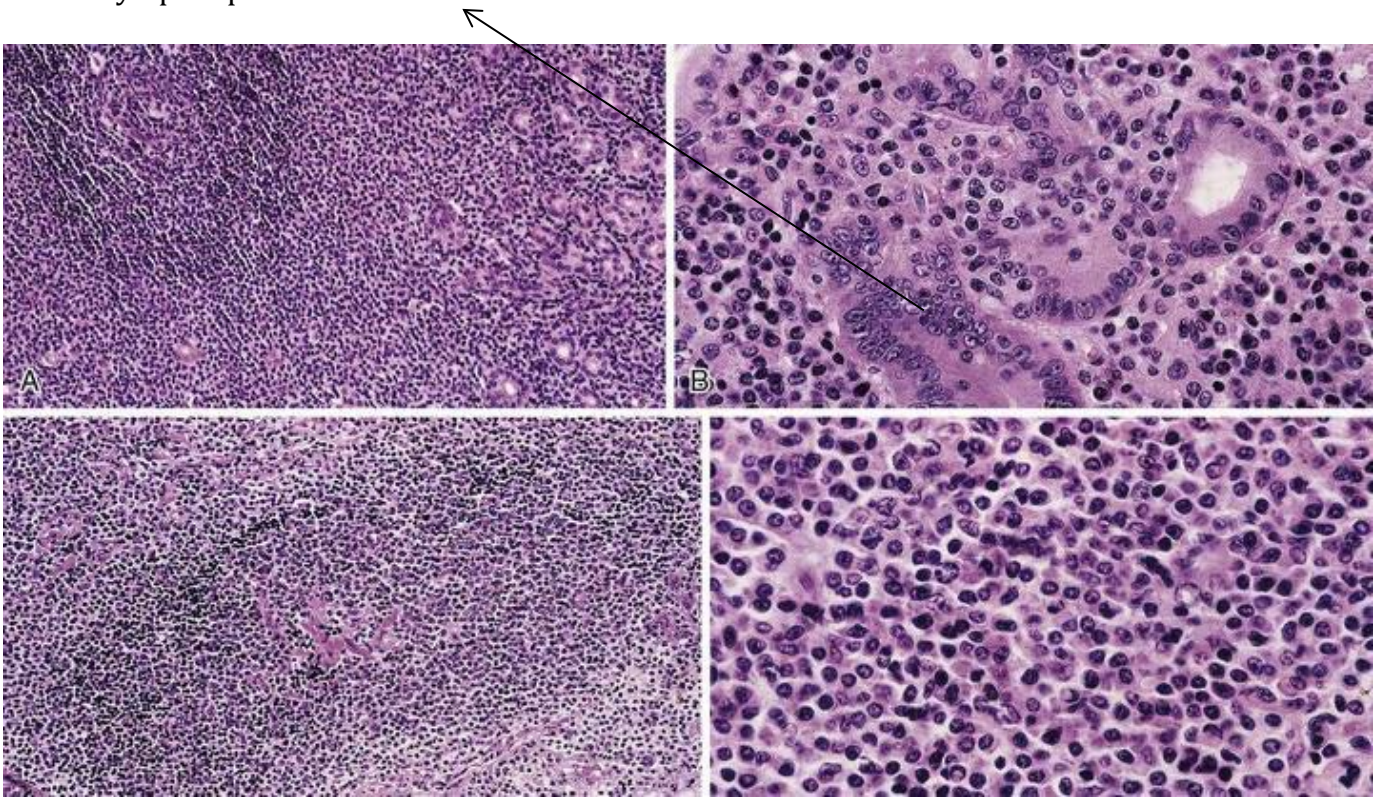
Centrocyte

centroblast

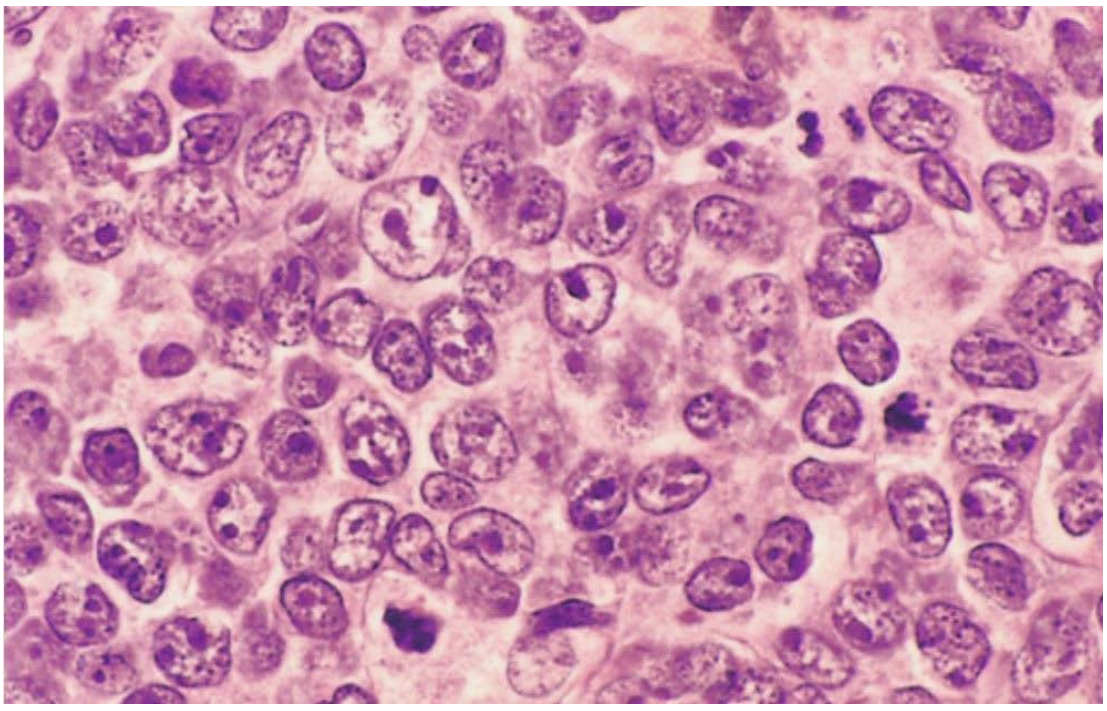
4- Extranodal Marginal Zone Lymphoma

Morphology:

1. lymphocytes are small to medium in size with variable cytoplasm
2. Lymphoepithelial lesions



5- Diffuse large cell lymphoma (presents as large cells with at least double the size of a normal lymphocyte and diffused arrangement)



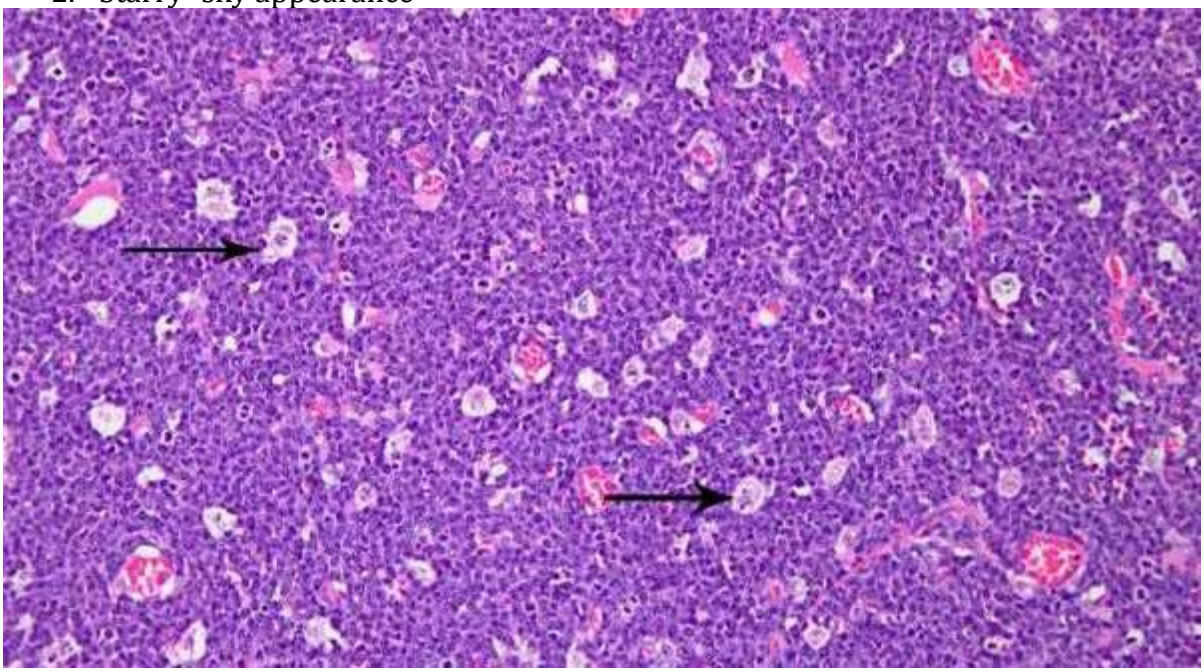
Lecture 8

1- Burkitt Lymphoma

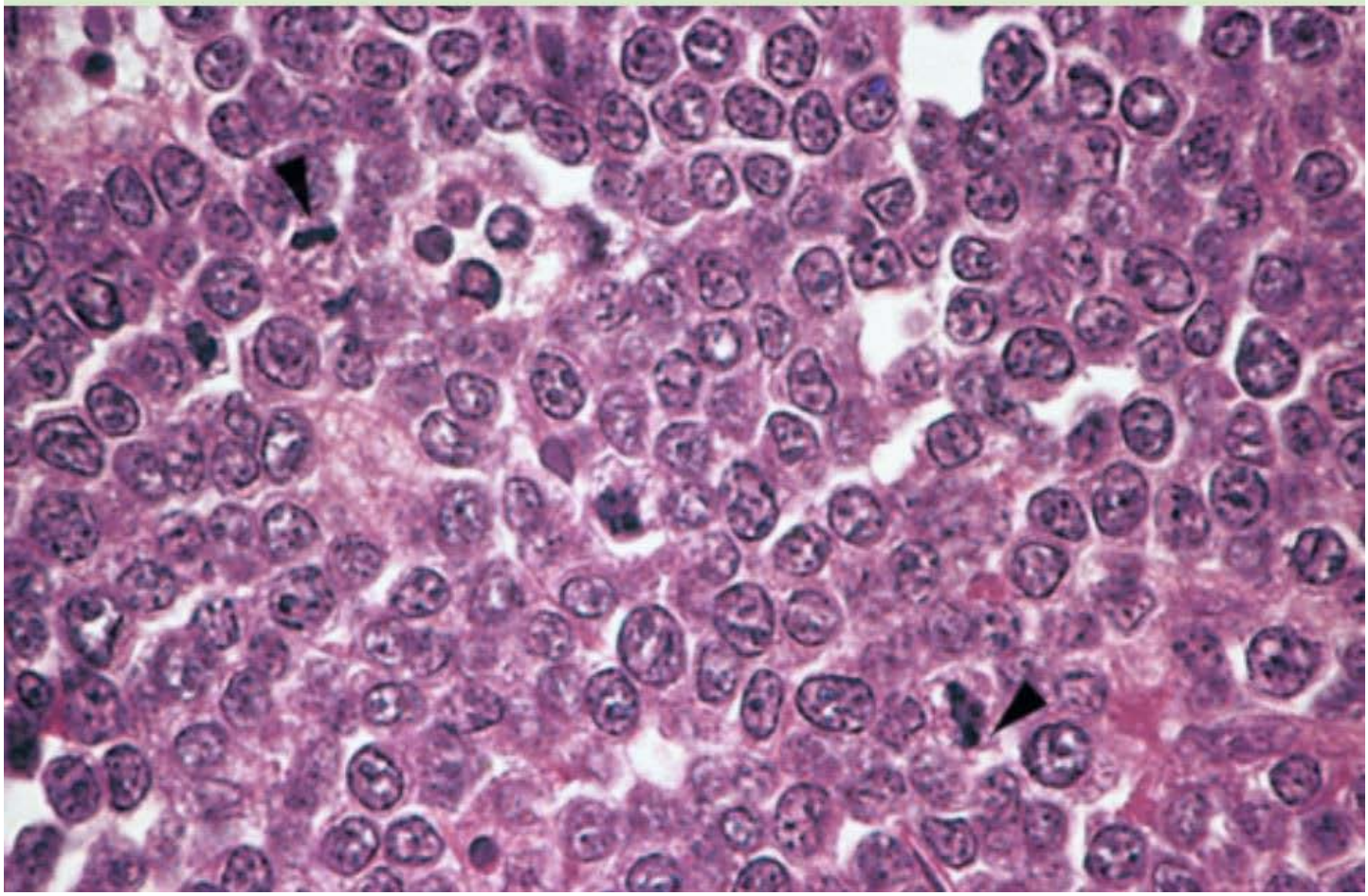
Clinical Presentation: (fastest growing tumor in humans)

Morphology:

1. Sheets of medium sized cells
2. Starry -sky appearance

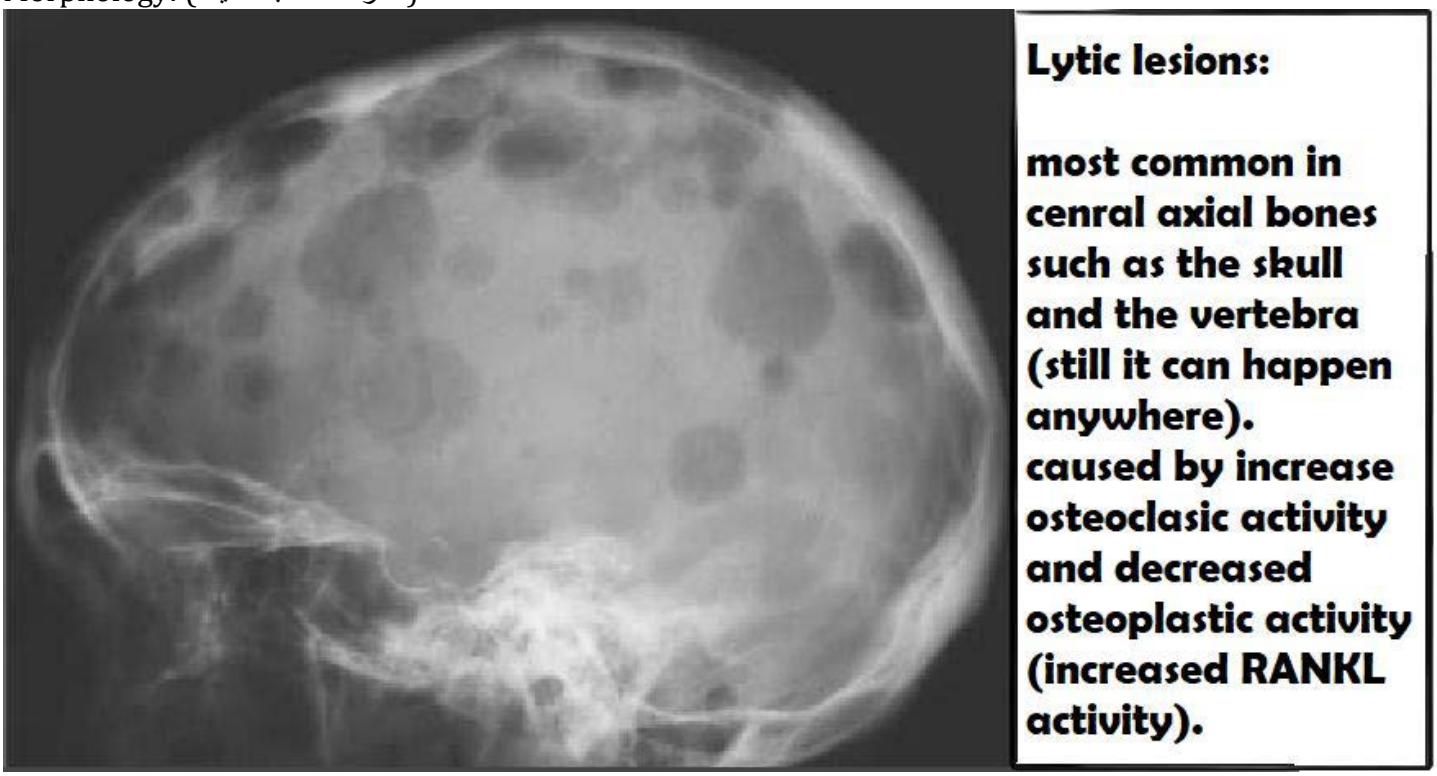


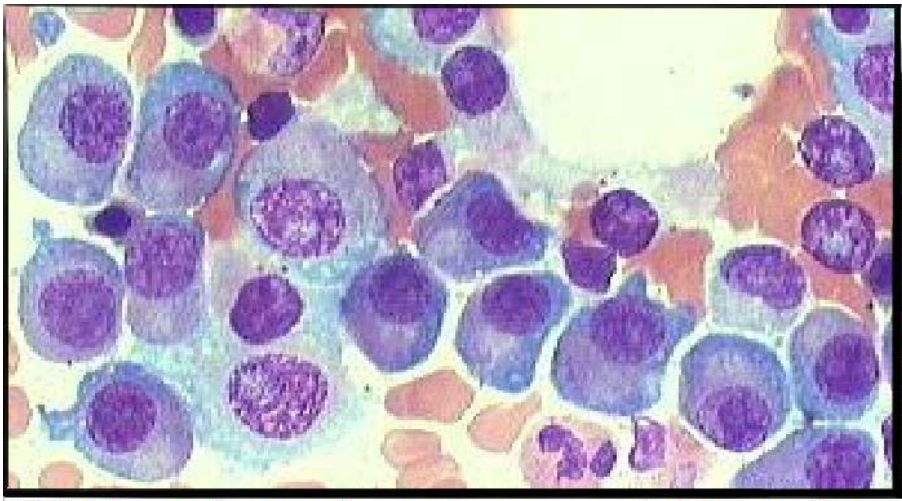
3. Variable cytoplasm, several nucleoli
4. Frequent mitosis



2- Plasma cell myeloma (multiple myeloma)

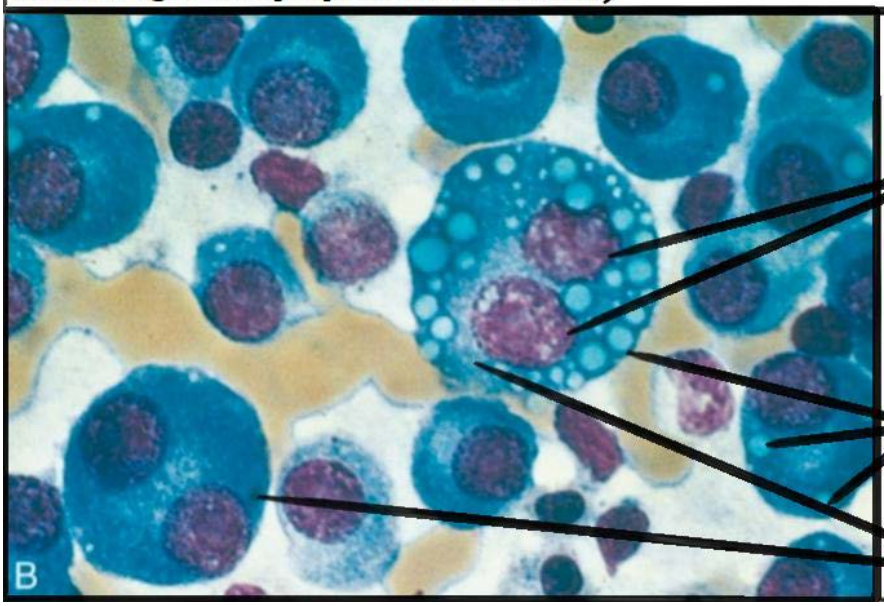
Morphology: (شكرا لصاحب الشيت)



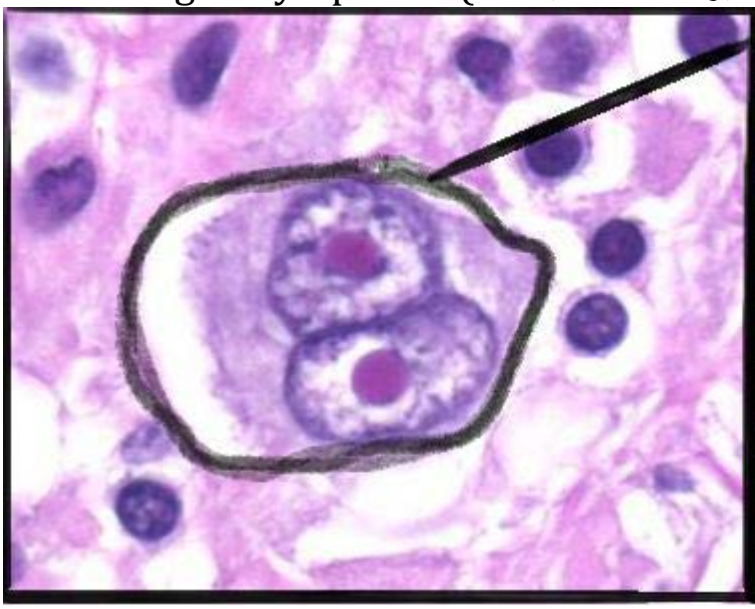


Plasma cells: have abundant basophilic cytoplasm, prominent perineuclear hof, round eccentric nucleus with coarse chromatin (clock-face)

Multiple myeloma cells may have normal plasma cell appearance and may have an abnormal appearance (binucleation, large size and vacules - which might be cytoplasmic or nuclear)

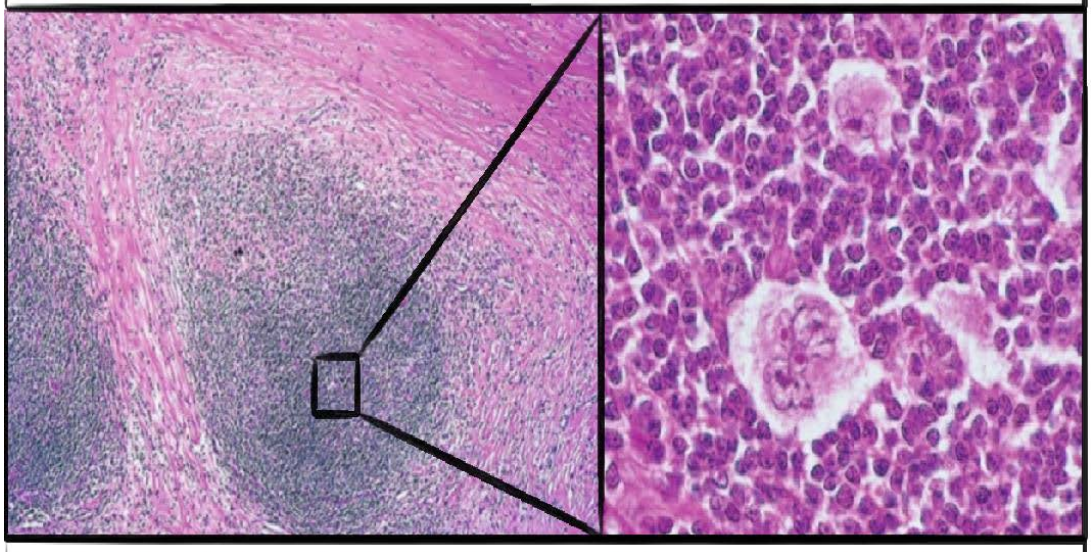


3- Hodgkin lymphoma(8 شيت صاحب كثير اكرا)



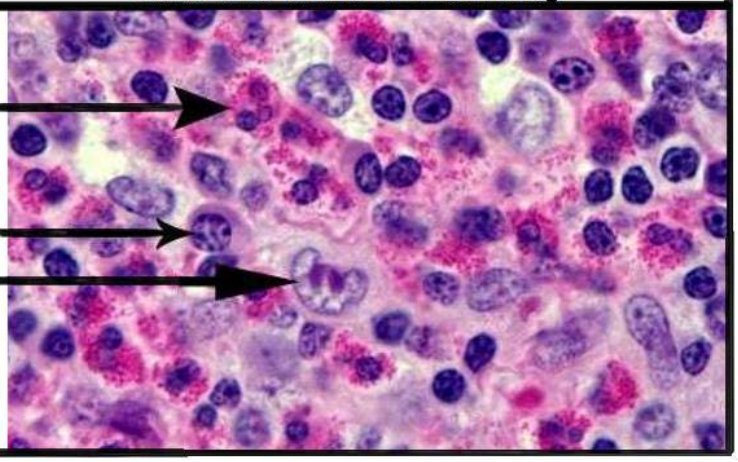
RS-cell:
***Huge cell (its nucleulous might be bigger than a normal lymphocyte).**
***two nucleui opposing each other, prominant nucleuli.**
it is hard to miss.

Classic HL: Nodular sclerosis



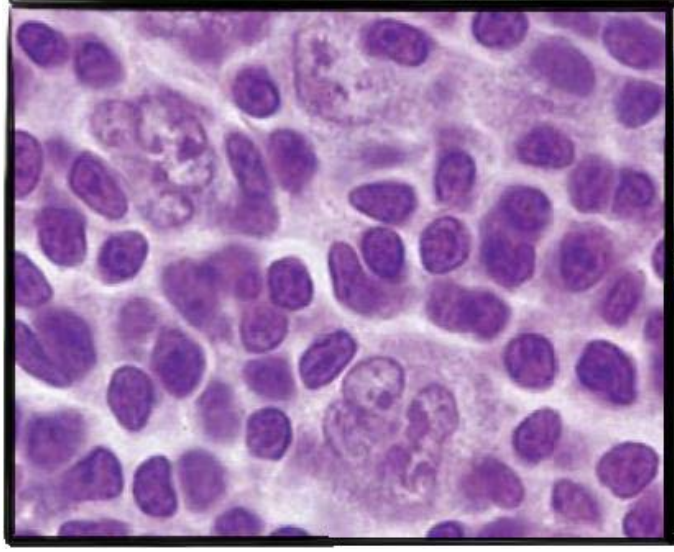
Contains nodules that are surrounded by a fibrous tissue, if we zoom in we will found RS-cells surrounded by benign reactive lymphocytes.

Classic HL: Mixed cellularity



*you find different types of cells in this type

Nodular lymphocyte predominant HL (NLP HL)



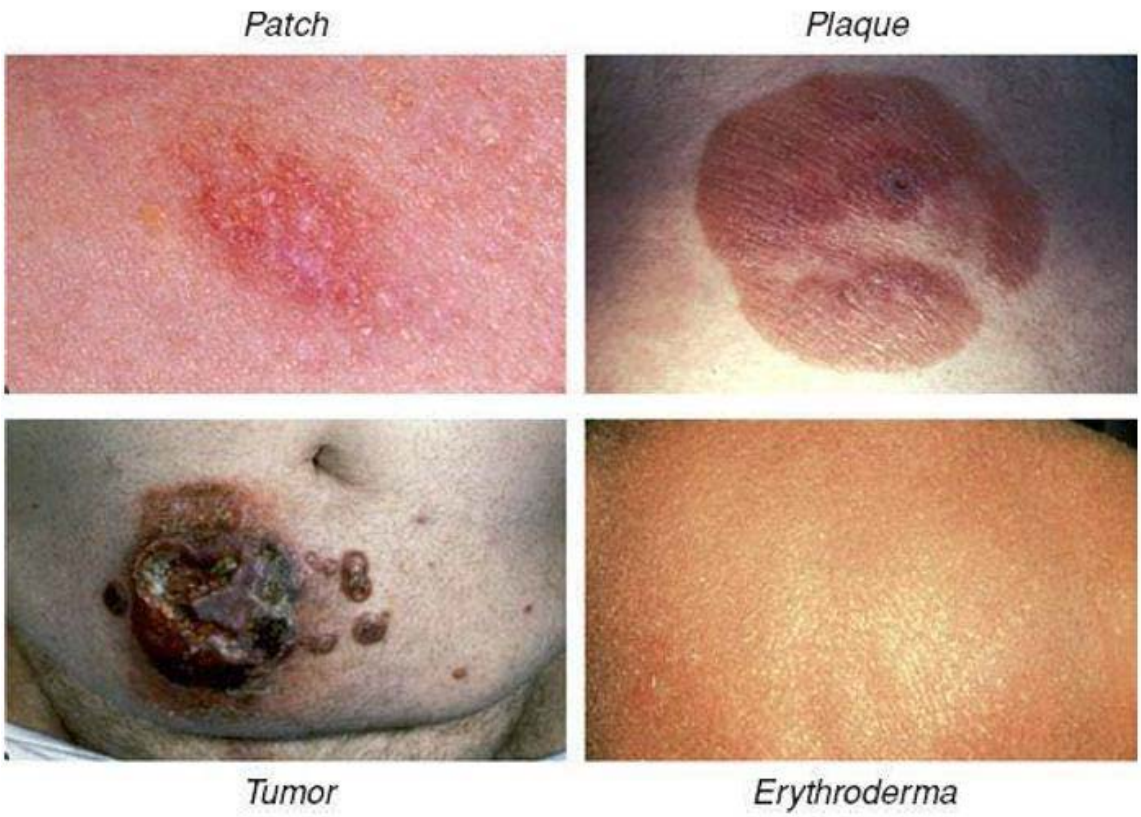
Large atypical cells called (Popcorn cells) surrounded by reactive lymphocytes and inflamatory cells

4- Mycosis fungoides

Clinical Presentation:

MF has three stages:

1- erythrodermic rash 2- plaque phase 3- Tumour phase



Note from the sheet: Patch: localized redness/ Plaque: can be felt (palpated)/ Tumor: causes necrosis/ Erythroderma: generalized redness.

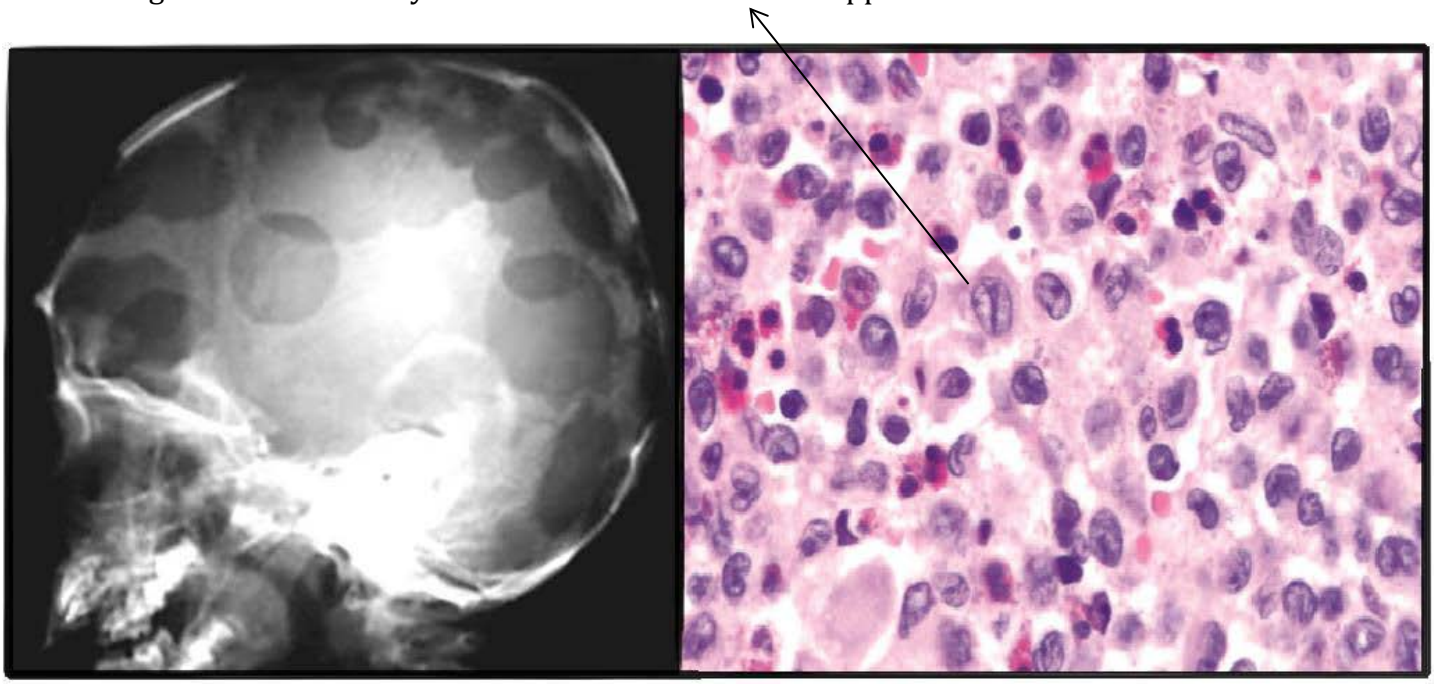
Morphology:

You can see the lymphocytes invading the epidermis which does not happen normally, indicates MF

5- Langerhans cell histiocytosis (A Histiocytic neoplasm)

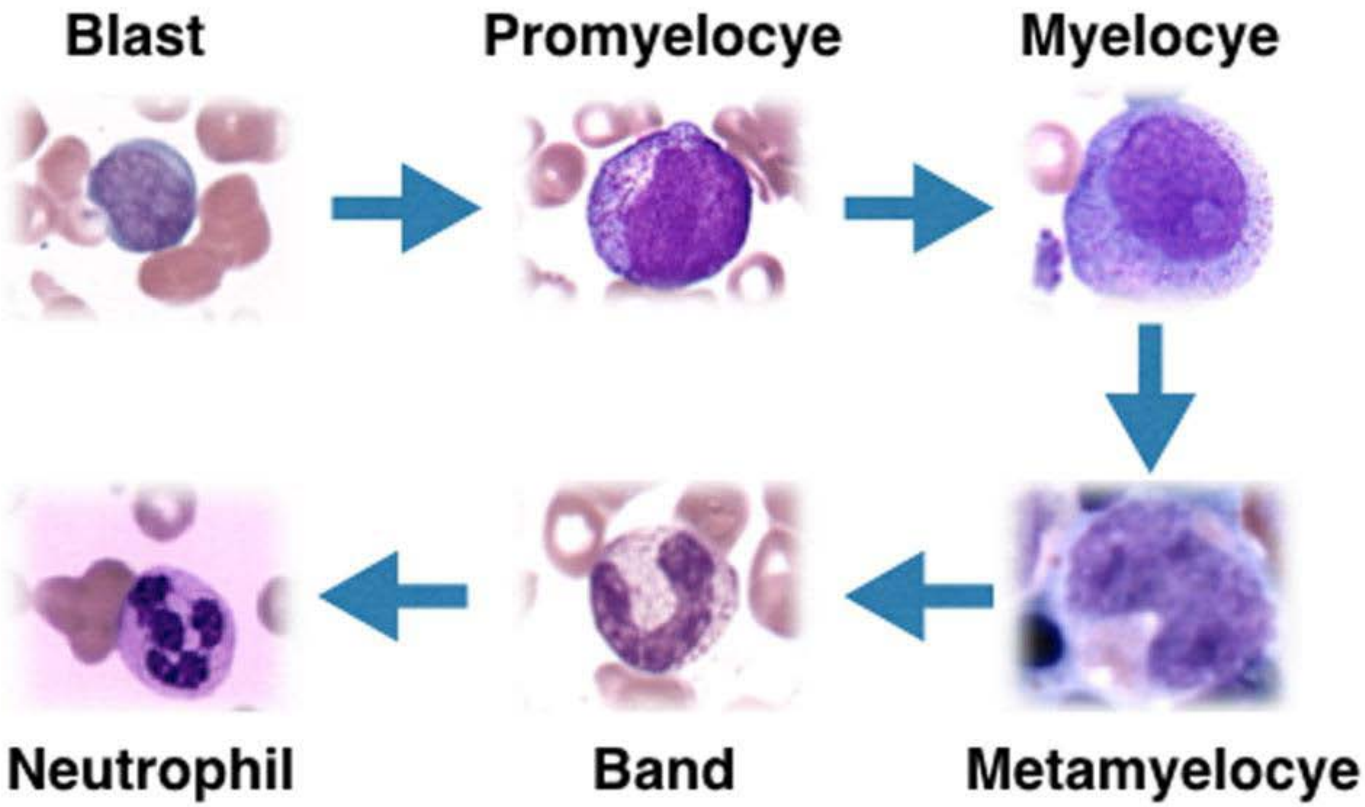
Morphology:

1. Lytic Lesions in the Skull
2. Langerhans cell histiocytosis cells have a coffee bean appearance



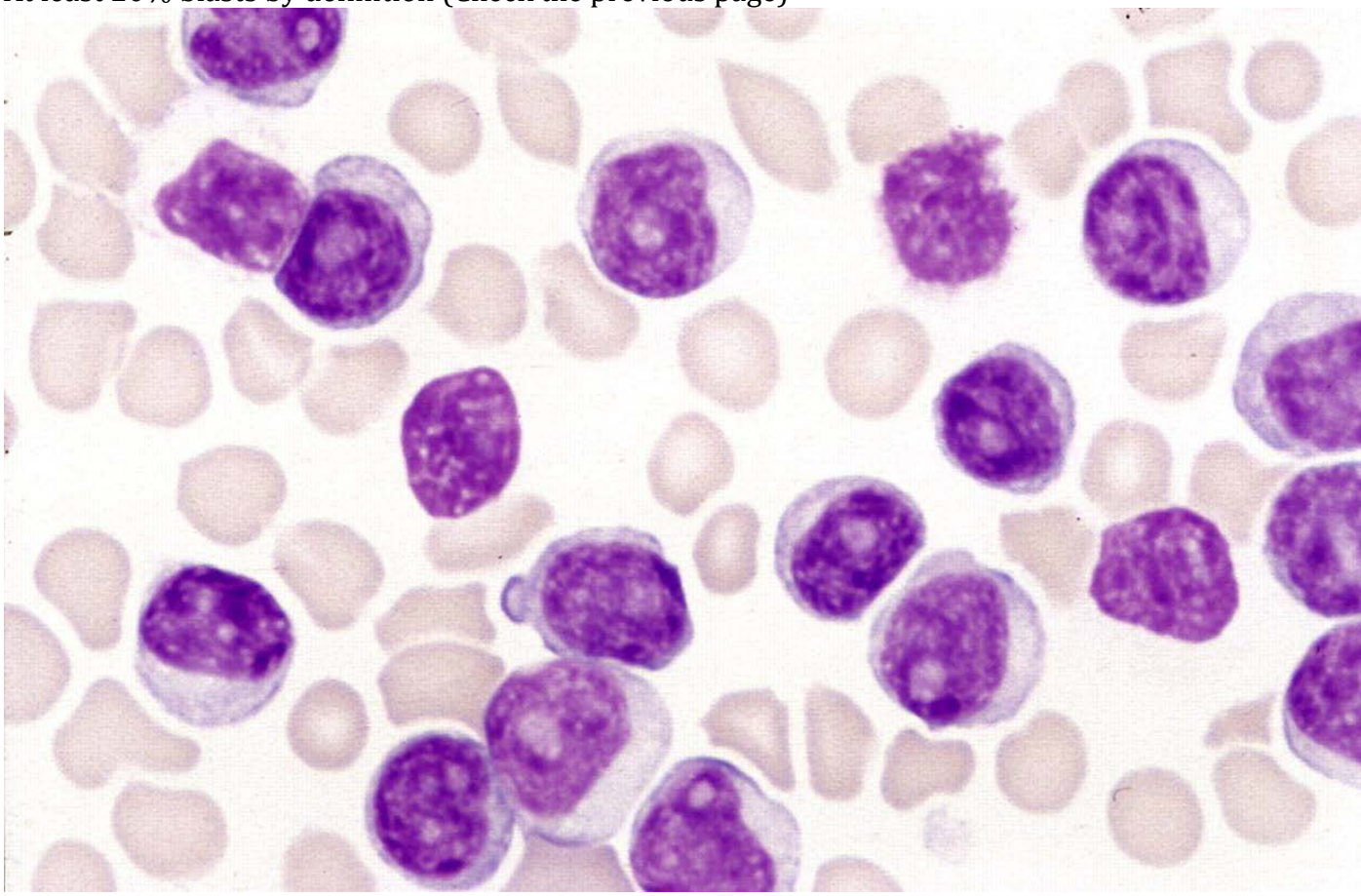
Lecture9

Neutrophil Stages of Differentiation

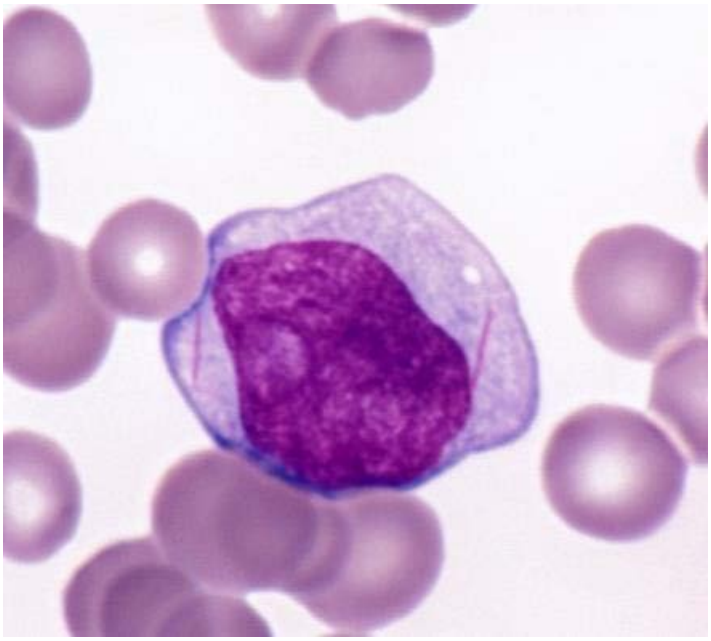


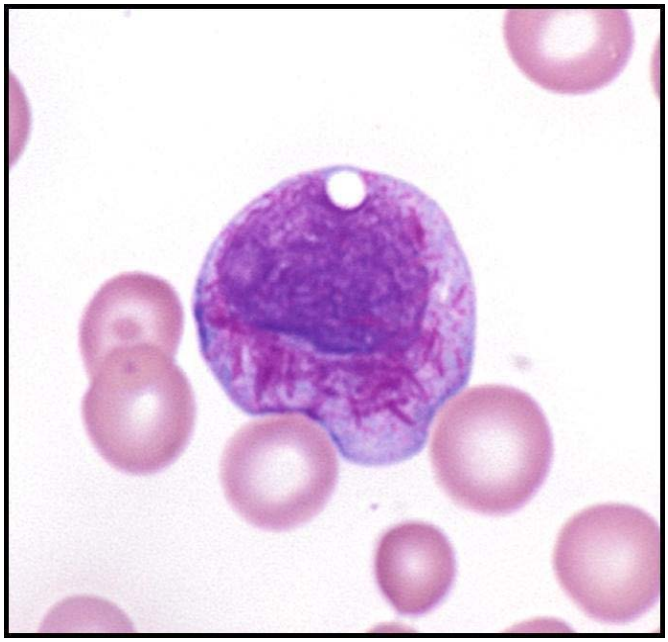
1- Acute myeloid leukemia

1. At least 20% blasts by definition (Check the previous page)



2. Auer rods (needle shaped structures in the cytoplasm)

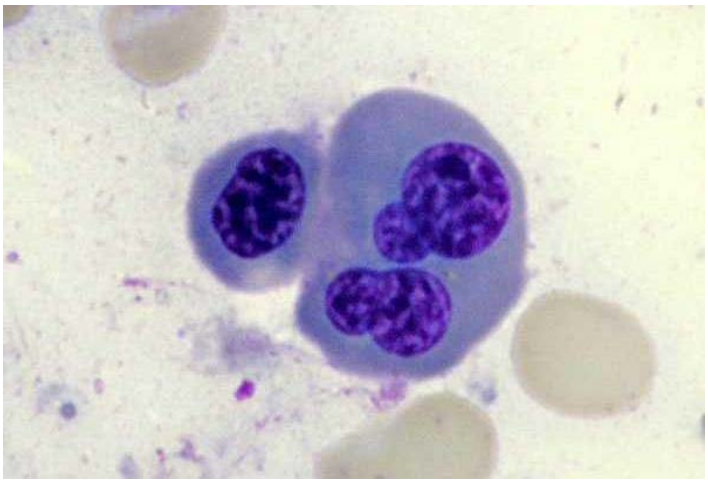


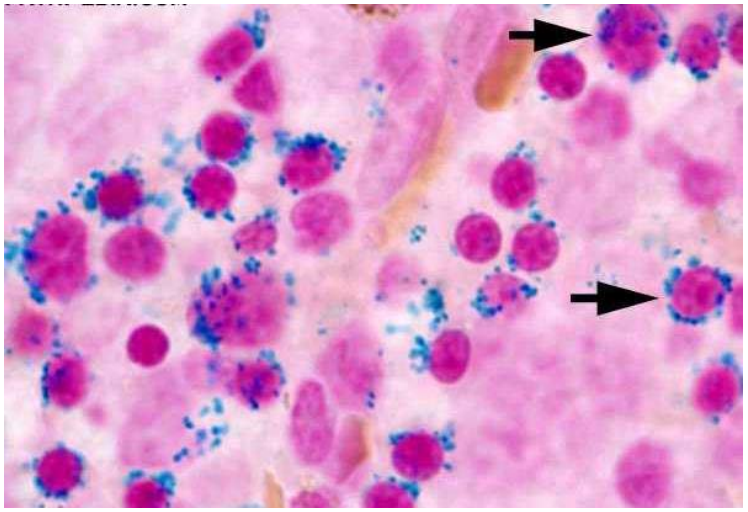


2- Myelodysplastic Syndrome

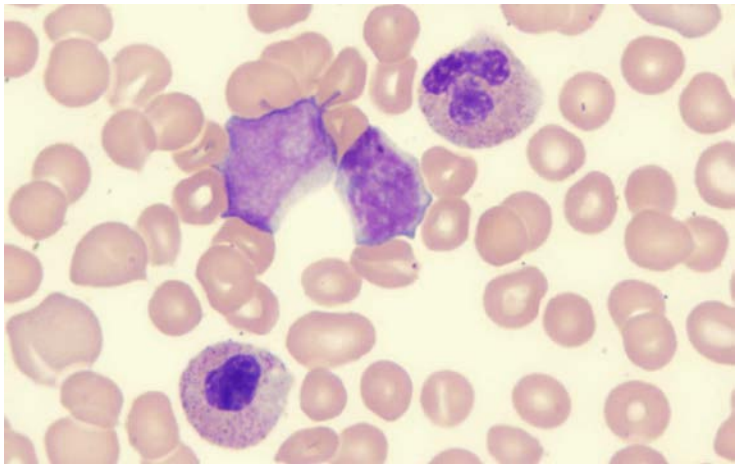
Morphology:

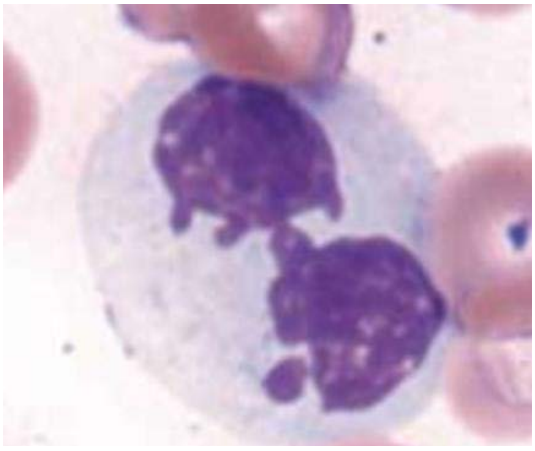
1. Erythroid: Abnormal nuclear contour and iron deposits (ring sideroblasts)



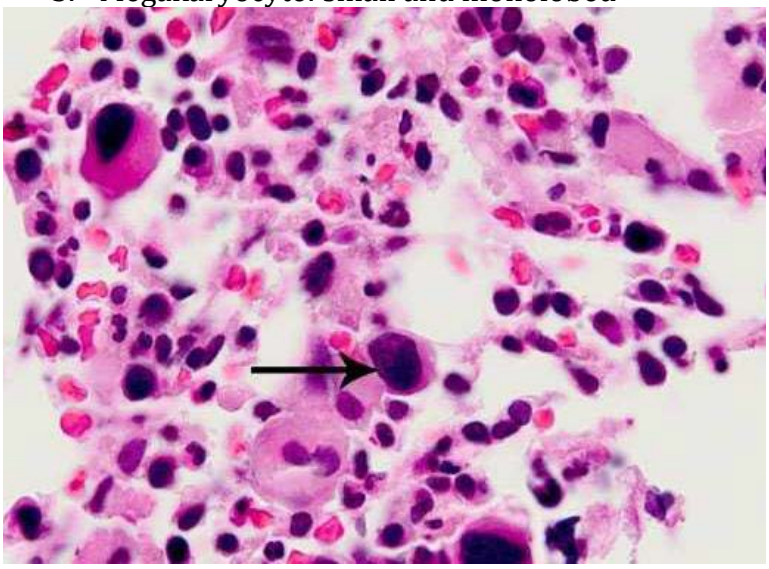


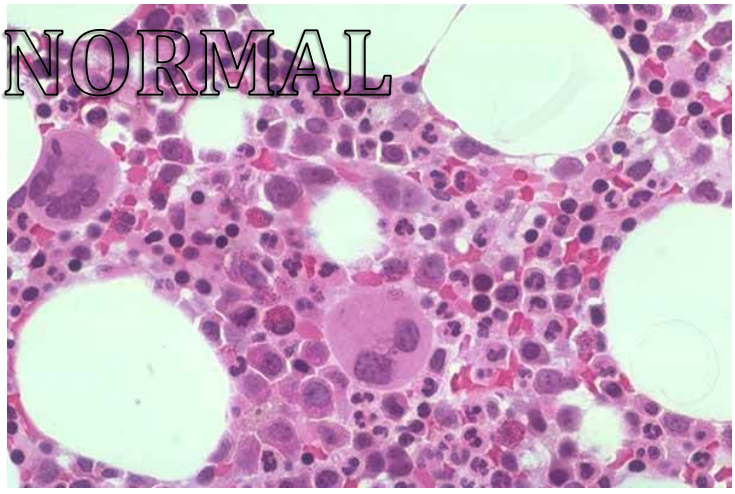
2. Myeloid: abnormal segmentation and granulation





3. Megakaryocyte: small and monolobed

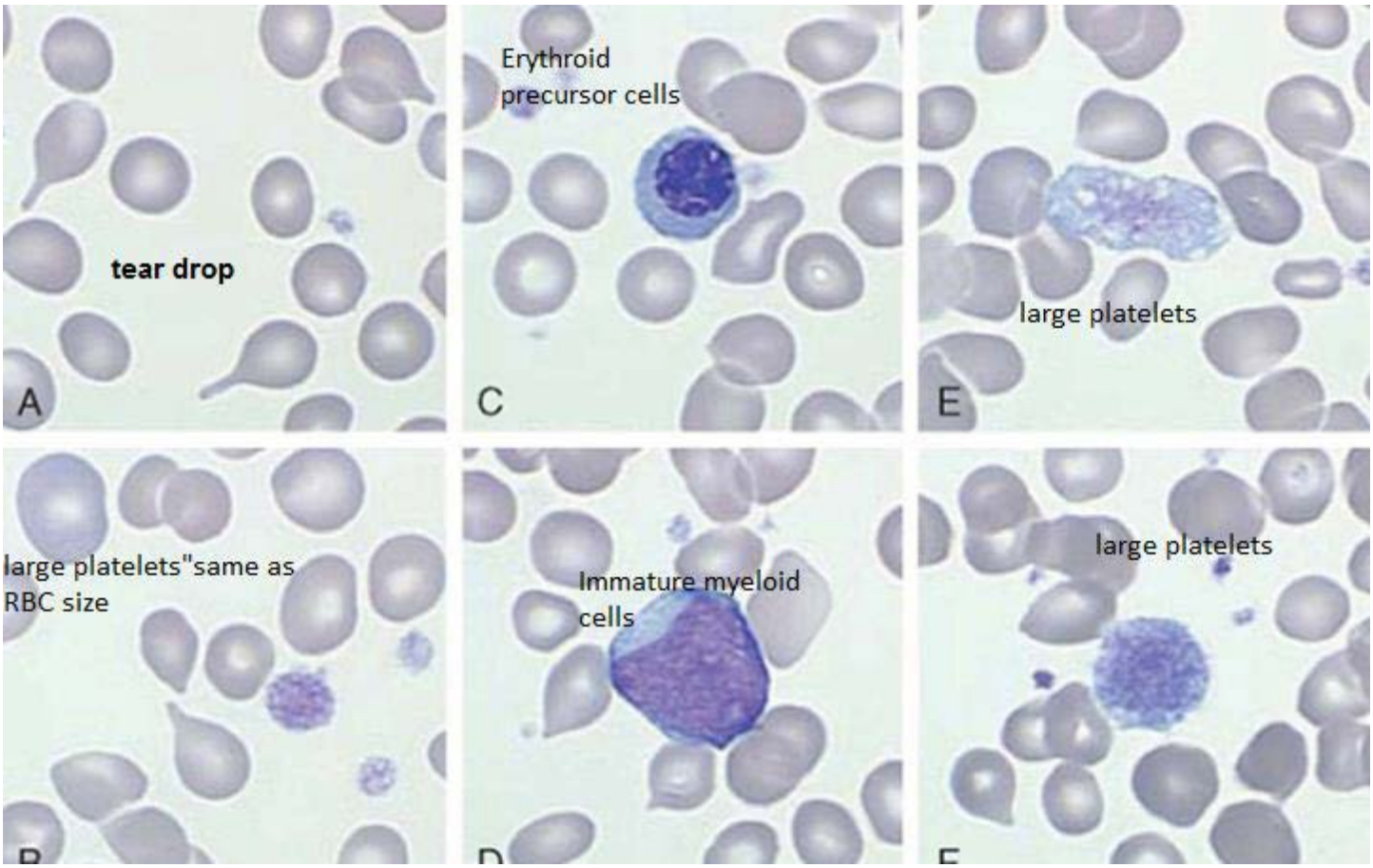




3- Primary myelofibrosis

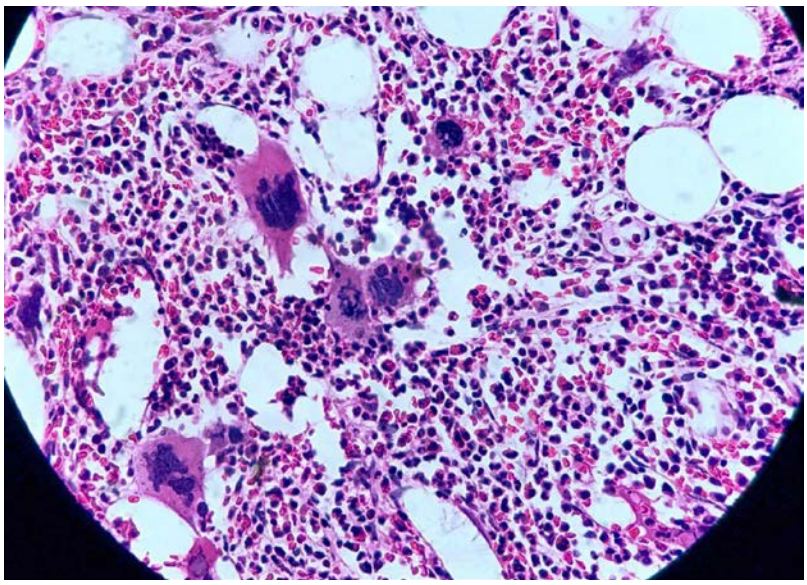
Morphology:

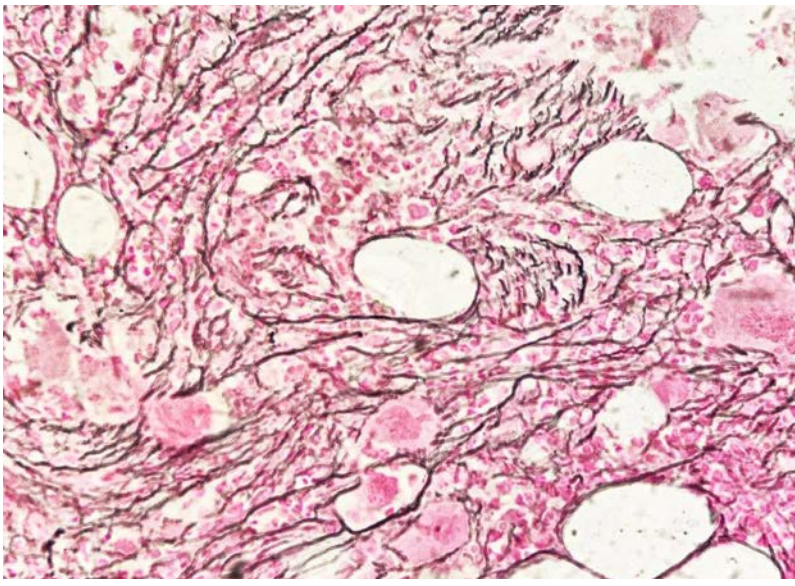
➔ Periphiral Blood:



➔ Bone Marrow:

Severe fibrosis and abnormally large and clustered megakaryocytes





Lecture 10

Sheet pictures are enough.