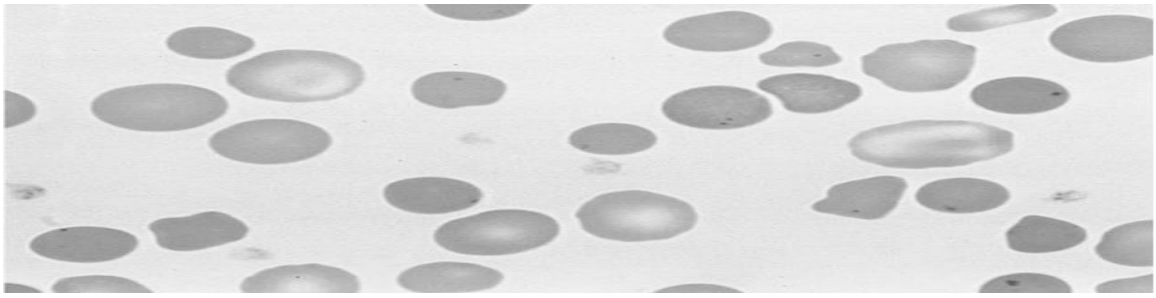
Pathology Lap:

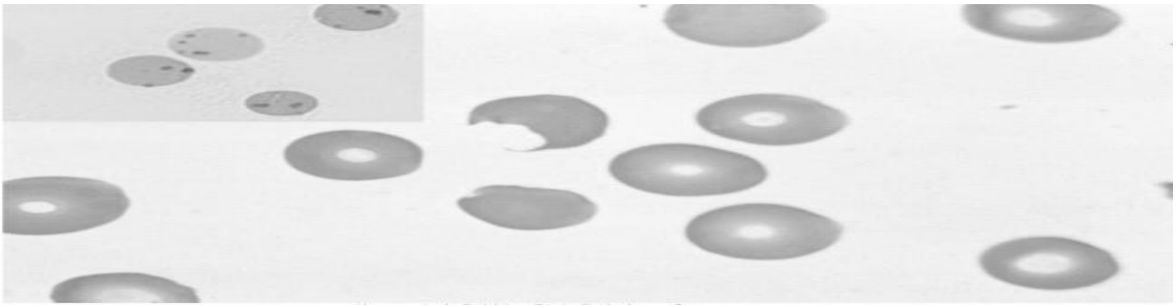
According to 4th year students, Doctor will not ask only 'Identify this blood film', he will ask about sths more, so i put extra informations in addition to their morphologies (those which are underlined) .

Good Luck ;D



Hereditary Spherocytosis

- a frame shift mutation, AD
- common in North Europe.
- not age-specific.
- (Low MCV)- (Normal MCH)- (High MCHC).
- The dot is : (Howell Jolly body) .
- extravascular hemorrhage.
- Early lysis of RBCs in osmotic fragility test.
- Signs and symptoms are including anemia , jaundice and splenomegaly.
- Treatment : Splenectomy.



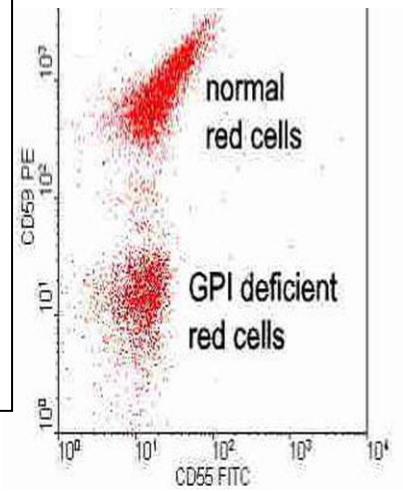
Glucose-6-Phosphate Dehydrogenase Deficiency.

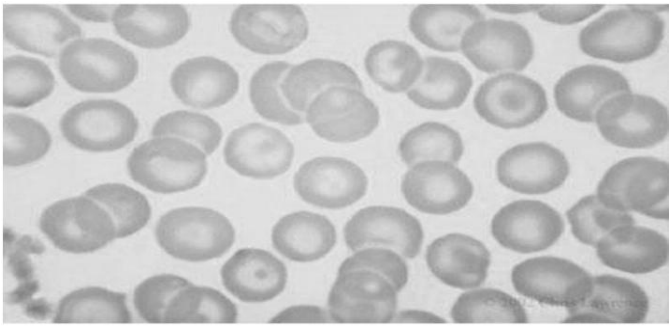
- Inherited as X-linked recessive, most patients are males .
- common in our region (The Middle East) and also in Africa.
- symptoms vary (mild-moderate-severe).
- bodies known as (Heinz Bodies), stained by : crystal violet , supravital stain.
- RBCs look as if they were bitten in a blood film (diagnostic tool).
- intravascular hemolysis.

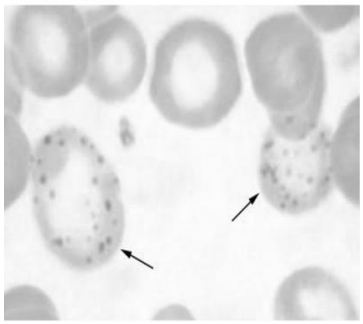
- Symptoms are including hypoxia all over the body and met-hemoglobinemai which lead to bone pain , red urine.
- Diagnosis by: morphologic changes , enzyme assay.

Paroxysmal Nocturnal Hematuria (PNH)

- Acquired, intravascular .
- test which is done called flow cytometry test.
- Normal cells have high amounts of these two proteins i.e. positive antibodyprotein reactions will be noticed with *high intensity values* (around 1000 for CD59 that's why the shadow is directed *upwards* and around 100 for CD55 that's why the shadow is directed to the *right*) . In contrast, GPI deficient cells have low amount of both proteins (intensity is around *10 only*) that's why the shadow is directed *downwards* and to the *left*).



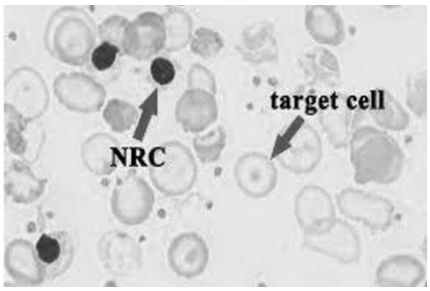


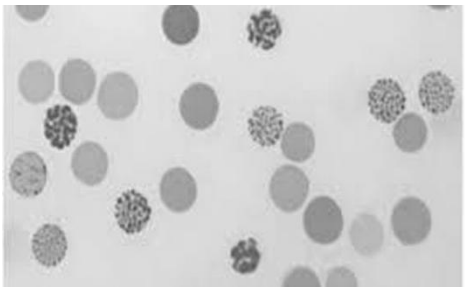


Thalassemia.

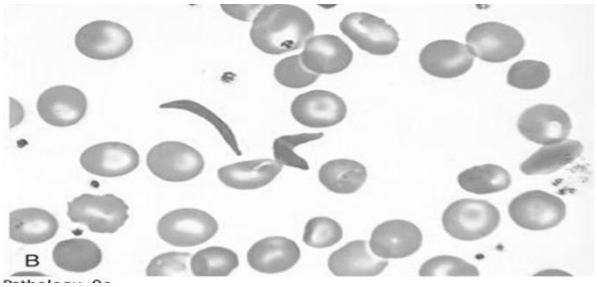
- Inherited as AR, alpha (deletion mutation) beta (point mutation).
- Common in Mediterranean Region , Middle East , Tropical Africa , India and South-East Asia.
- hypochromic microcytic anemia, Extravascular and intravascular hemolysis.
- ineffective erythropoiesis (increased RBC count but they are very pale and small).
- 2 types of Hemichromes : in Beta thalassemia (solid masses of excess unpaired alpha chains)

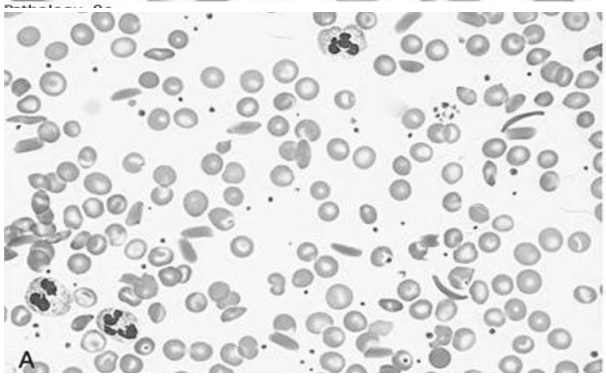
- high erythropoietin levels; patients will have secondary hemisderosis, skin pigmentation, crewcut appearance, Hepatomegaly and splenomegaly, chipmunks facial bones, abnormal bone growth, Heart failure, Thrombosis .





- important features: *target cells(red dot), *Basophilic stippling (blue small dots), Normoblast .. Left pic.
- hemoglobin H disease by using supravital stain -> we can see golf Ball shaped cells full of small dots (hemichromes).. Right pic.





sickle cell anemia.

-Valine instead of the normal Glutamate, AR.

- common in middle east, south Arabia also in Africa and India.

- a needle shape.

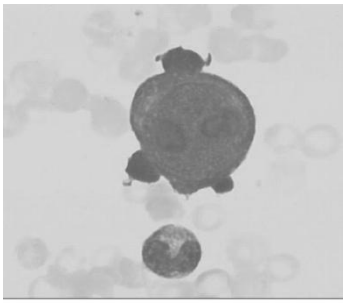
- intravascular and extravascular hemolysis.

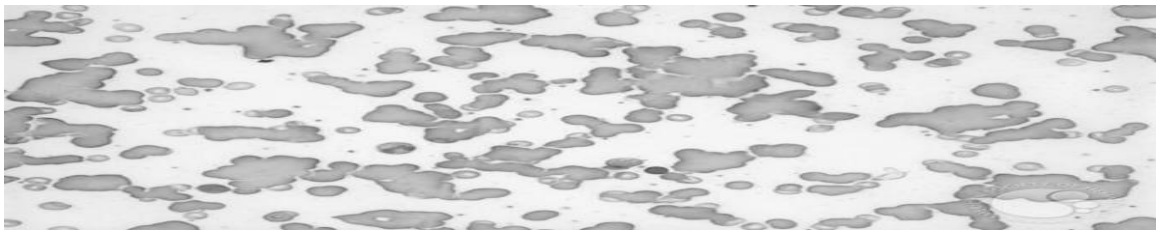
- erythropoietin will be increased, patient will have erythrocytosis, secondary hemosidrosis, crewcut appearance, hepatosplenomegaly but later they have absent spleen (autosplenomegaly.

-treated by: Blood transfusion, and increasing fetal hemoglobin and hbA2.

parvovirus B19

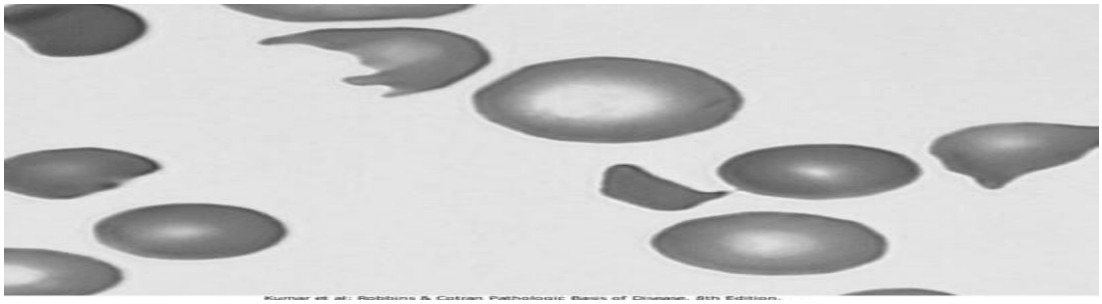
- lead to aplastic crisis.
- Parvovirus can be visualized in bone marrow biopsy, the parvo particles are present in the nucleus of the normoblast.





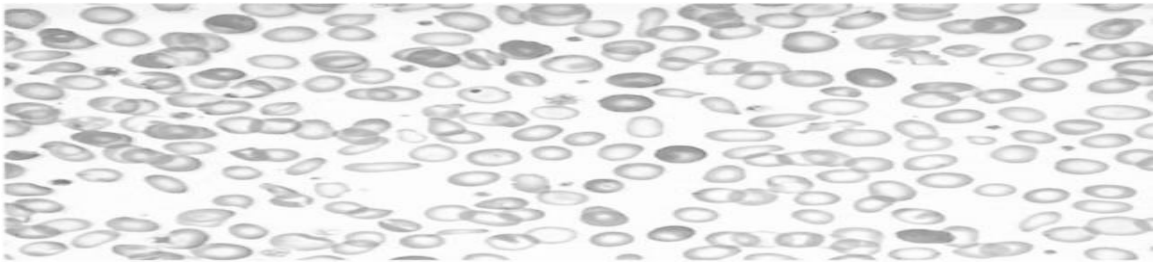
Autoimmune Hemolytic anemias:

- Is done by Coomb's test.
- Th morphology similar to that we see in case of hereditary spehrocytosis.
- extra-vascular hemolysis.
- RBCs agglutinated together i.e. clumped together in large amounts.



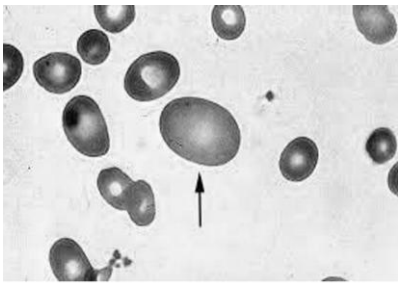
Trauma to the RBCs

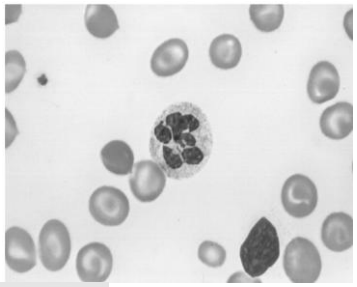
- intra-vascular hemolysis.
- broken RBCs referred to as *schictocyte,* they appear as fragmented cells.



Iron Deficiency anemia.

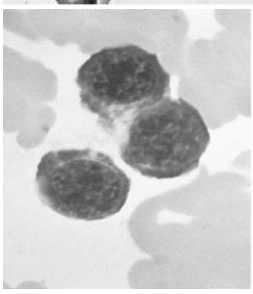
- *most common type of anemia.*
- It is a worldwide anemia but specifically in developing countries.
- microcytic hypochromic anemia .
- cell membrane is more rigid than normal so piokilocytosis, *few target cells* .
- minor degree of hemolysis.
- *major cause of thrompocytosis.*

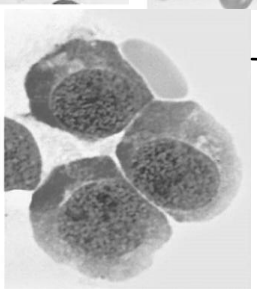




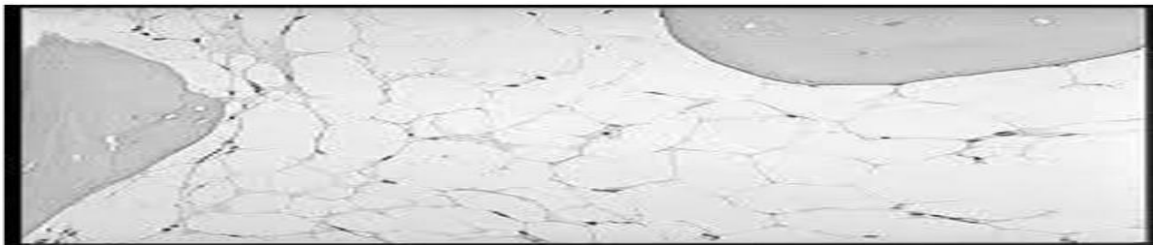
Megaloblastic anemia.

*appear as large normoblasts (macroovalocytes), pallor center .
*neutrophils are segmented.
**megakaryocytes, also they appear larger and more lobulated.*





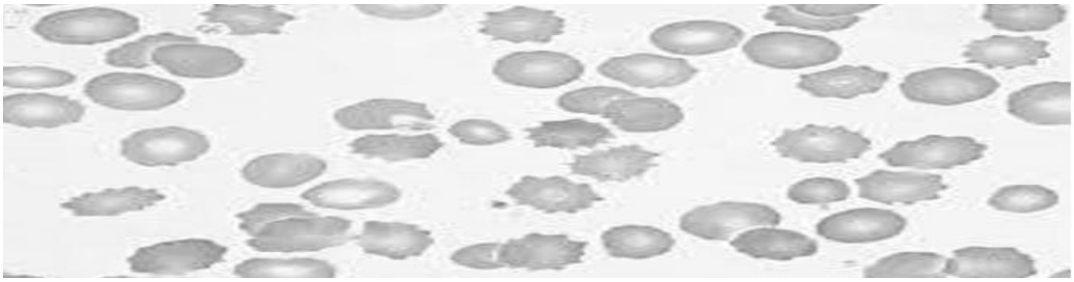
In the bone marrow, on the left they are normal (normoblasts) and on the right (Megaloblastic anemia) they are larger in size and the nucleus is more pale.



Aplastic Anemia

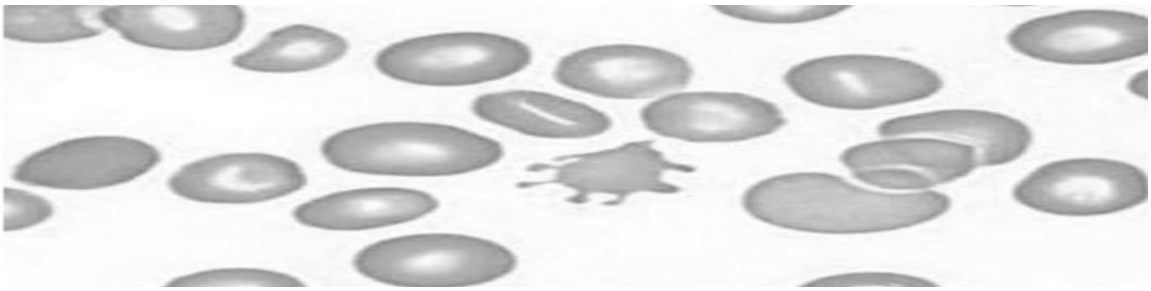
- common in children and young adults.
- *acquired in most cases but sometimes it's congenital (Fanconi anemia).*
- *normochromic normocytic anemia with Pancytopenia.*
- Diagnosis: *We conduct a bone marrow biopsy and we notice the predominance of fat over the hematopoietic cells.*

- this pic. Shows how Hematopoietic elements in this bone marrow biopsy are markedly reduced.



Chronic renal failure

- the only anemia that has low erythropoietin .#
- *appear normochromic normocytic.*
- circumferential spikes(*ecchinocytes); due to accumulation of uric acid.*



Chronic liver disease

- Multifactorial.
- *RBCs will have longer projections we call it acanthocytes.*

Your colleague Aseel Olaimat.