Anemia

Microcytic , normocytic , Macrocytic

MCQs

- which of the following is wrong?

Anemia of chronic disease is macrocytic anemia

- wrong about pernicious anemia?

Treated by oral vitamin B12

- true about anemia of chronic disease?

High level of hepcidin

- all are causes of iron deficiency anemia “IDA” except :

Blood loss
Low iron intake
Anemia of chronic disease ??

- A 64-year-old man is evaluated for a 6-week history of intermittent red-colored urine. He notes fatigue but otherwise feels well. Medical history includes hypertension, mechanical mitral valve replacement due to myxomatous degeneration, and calcium oxalate nephrolithiasis. He is a current smoker with a 60-pack-year history. Medications are amlodipine, warfarin, and aspirin. On physical examination, temperature is 37.6 °C (99.7 °F), blood pressure is 112/72 mm Hg, and pulse rate is 98/min. BMI is 30. Examination of the heart revet a metallic click with a grade 2/6 cardiac systolic murmur that radiates to the axilla. The lungs are clear. There i no costovertebral angle tenderness. The remainder of the examination is unremarkable. Urinalysis is dipstick positive for 3+ blood, 1+ protein, and no leukocyte esterase or nitrites; on microscopic examination, there are no cells or casts, although calcium oxalate crystals are seen. Which of the following is the most likely cause of this patient's clinical findings?

Select one:
a. Bladder cancer
b. Glomerulonephritis
c. Hemoglobinuria
d. Rhabdomyolysis
e. Nephrolithiasis

- In folic acid deficiency anemia, all the followings are true EXCEPT Select one:

a. Jaundice
b. Increase lactate dehydrogenase
c. Low reticulocyte count.
d. Neurological signs and symptoms
e. Thrombocytopenia

- Splenomegaly is a common clinical physical signs in all the following diseases except. Select one:

a. Sickle cell anemia.
b. Typhoid fever.
c. Brucellosis.
d. Portal hypertension
e. B-Thalassemia major.

- Which one of the following doesn't cause folic acid deficiency? Select one:

a. Veganism.
b. Gluten sensitivity (Celiac disease)
c. Hemolytic anemia.
d. Pregnancy.
e. Jejunal resection.

- A 44- year-old woman presents with recurrent fever, pallor and shortness of breath. She has noticed a petechial rash on her skin. A blood test revealed pancytopenia. During examination you palpate a large spleen. Which one of the following investigations would differentiate between hypersplenism and aplastic anemia? Select one:

a. Reticulocytes count.
b. Direct Coomb's test.
c. RBC G6PD enzyme level.
d. Serum protein electrophoresis.
e. Osmotic fragility test.

- One of the following is false in iron deficiency anemia.

a. Low serum ferritin.
b. High soluble transferrin receptors.
c. Low serum iron.
d. Low Red Cell Distribution Width(RDW).
e. Increased total iron binding capacity.

- One of the following is not a complication of celiac disease Select one:

a, T-cell lymphoma
b. Osteoporosis
c. Aplastic anemia
d. Ulcerative jejunitis
e Increased risk of esophageal carcinoma

- in macrocytic megaloblastic anemia , one of the following is true

a. hypersegmennted neutrophil
b .high reticulocytes count
c .increased ddirect bilirubin
d .high WBCs
e.low LDH

- An elevated level of hemoglobin A2 in a patient with mild microcytic anemia suggests the diagnosis of?

a. Alpha thalassemia
b. Sickle trait
c. Beta thalassemia
d. Hereditary spherocytosis
e. Hereditary persistence of fetal hemoglobin

- Hemolytic anemia is characterized by all of the following except?

a. Increased LDH
b. Increased reticulocytosis
c. Increased unconjugated bilirubin
d. Increased haptoglobin
e. Lead poisoning

- It is unlikely to see macrocytosis in a patient with anemia in which of the following?

a. Reticulocytosis
b. Vitamin B12 deficiency
c. Folate deficiency
d. Myelodysplastic syndrome
e. Sideroblastic anemia

- All the following are true about hereditary spherocytosis except one ?

a- Splenomegaly
b- Gall bladder stone
c- Hemolytic anemia
d- Howell Jolly bodies inside RBC
e- Positive osmotic fragility test

- A30 year woman complains of hands joint pain , recurrent mouth ulcer , shortness of breath , anemia . blood tests reveal raised ESR and normal CRP. What is most likely diagnosis ?

a- SLE
b- Systemic sclerosis
c- Sjorgens syndrome
d- Discoid lupus
e- Bechets disease

- Increases reticulocytes count is found in all of the following except ?

a- Thalassemia major
b- Hereditary spherocytosis
c- G6PD deficiency
d- Aplastic anemia
e- Autoimmune hemolytic anemia

- Hypochromic microcytic anemia is a feature of one of the following disease:

a) Thalassemia minor
b) Hereditary spherocytosis
c) Autoimmune hemolytic anemia
d) Pernicious anemia
e) Folic acid deficiency anemia

- the most common presentation in patients with malabsorption is?

a. Hyperkalemia
b. Anemia
c. Incidental finding of positive anti TTG
d. Melena
e. High ESR

- anemia of chronic disease all false except?

A. Low serum ferritin
B. Macrocytic
C. High total iron binding capacity
D. High Fe saturation
E. has high hepcidin

- All true except ?

Answer: Fe deficiency has low RDW

- Patient with history of treatment of pneumonia (he took co-triamethaxazole) complaining of sign and symptoms of anemia with splenomegaly , CBC : Hb: 9 , MCV : 90 , reticulocytes count : 7% what is most likely diagnosis :

G6pd (co-trimethaxazole is one of the drug which cause hemolytic crisis) 6- PT prolongation doesn't occur at : intrinsic pathway

- B12 def anemia ? Wrong ?

Commonly caused due to Diet deficiency

- Not associated with anemia of chronic disease :

(essential HTN)

- Not a cause of macrocytic anemia ;

thalassemia b

- all true about pernicious anemia except:

response to iron treatment

- Not a cause of thrombocytosis:

a. Iron defeciency anemia
b. Myelodysplasia
c. Pernicious anemia

- Another marker that is used to diagnose vitamin B12 defeciency:

a. Elevated methylmalonic acid level
b. Decrease methylmalonic acid level
c. Elevated homocysteine level
d. Decrease homocysteine level

- A typical cause of anemia with normal RDW:

a. Thalssemia
b. Iron defeciency anemia

- **The definitive treatment of B-thalassemia major:**

a. BMT (Bone marrow transfusion)
b. Blood transfusion
c. Iron therapy

- **Alcoholic patient was found to have macrocytic anemia, the most likely cause:**

a. Vitmain B12 deficiency

- **Wrong about iron defeciency anemia:**

A. Low TIBC
B. Low retics response

Answer: (A) High TIBC

Corrected reticulocyte count = %reticulocyte X (Patient's Hct/Expected normal Hct of 40) Our patient's

Corrected reticulocyte count is 2.5 x 23 / 40. It is 1.2%.

Less than 2% = hypoproliferative type. This means that her anemia is due to underproduction of red cells by the bone marrow.

- **Megaloblastic anemia, except:**

A. Dietary defeciency is common.

- **All are indications for transfusion therapy in sickle cell anemia, except:**

A. Stroke
B. Pain
C. Pain with occulusive ???
D. ???

- **All the following are true about thalassemia major Except :**

a. Hb electrophoresis shows mainly increase in Hb A2
b. failure to thrive with short stature
c. sever anemia
d. hepatosplenomegaly
e. treatment is by blood transfusion with iron chelating agent (desferrioxamine)

- All the following are subclinical presentations of celiac disease, except:

a. Mood changes
b. Iron def
c. B12 dfe
d. Unexplained elevation of liver enzymes
e. Recurrent abdominal pain

Ans: C (Mild to moderate anemia is present in 50% of cases. Folate deficiency is common, often causing macrocytosis. B12 deficiency is rare. Iron deficiency due to malabsorption of iron and increased loss of desquamated cells is common).

- 5 year-old girl came to ER because of fatigue and shortness of breath. She was taking amoxacililn for acute otitis medica. Laboratory testing showed Hb 5.5 gm/dL with normal WBC and platelet count. The smear showed numerous nucleated RBCs and spherocytes. Both direct and indirect test Coomb's test were positive. The patienthas:

a. Warm autoimmune hemolytic anemia (AIHA)

- A 17 year old pregnant lady was referred for evaluation of anemia. As a child, she was hospitalized with pneumonia and visited ER twice with abdominal pain. Two years ago, she was found anemia and iron was recommended, but intermittently taken. The examination was unremarkable except for a palpable spleen tip. The Hb was 10 with ferritin 105 and saturation 18%. The peripheral smear revealed slight hypochrmoasia and target cells, but no sickle forms. Hb electrophoresis results were HbA 26%, HbF 5%, and HbS 69%. Which of the following is the most likely diagnosis:

a. ? b. ? c. ? d. ? e. ?
Answer: B? B-Thalassemia minor + Sickle cell trait

- All the following may be found in Iron deficiency anemia Except.

a- Red cell distribution width (RDW) is less than 13.
b- microcytic RBC
c- low serum ferritin
d- low serum iron
e- increased TIBC

- Causes of indirect (unconjucated) hyperbilirubinemia include all thefollowing Except.

a- autoimmune hemolytic anemia
b- thallassemia major
c- G6PD deficiency anemia
d- Dubin-Johnson syndrome
e- Gilbert's syndrome

- A peripheral blood film shows hypersegmented neutrophils. What is the most likely ONE cause for this ?

a. Iron deficiency anemia
b. myelofibrosis
c. thalassemiamajor
d. thallasemia minor
e. megaloblastic anemia

- -23- year old woman presents with lethargy, the following blood results are obtained. Hb 10.4 g/dl, platelet 268x 10 9/L, WBC 6.3X 10 9/L, MCV 65 fl, Hb A2 9% (NORMAL < 3.5%),

Which ONE of the following is the most likely diagnosis?
a. B-Thallassemia minor
b. B-Thallassemia major
c. sickle cell anemia
d. hereditary spherocytosis
e. G6PD deficiency

- .Coomb's test is positive in ONE of the following.

a. warm autoimmune hemolytic anemia
b. hereditary spherocytosis
c. G6PD deficiency
d.paroxysmal nocturnal hemoglobinuria
e. malaria

- All the following are true about thalassemia major , Except :

a. Hb electrophoresis shows mainly increase in Hb A2
b. failure to thrive with short stature
c. sever anemia
d. hepatosplenomegaly
e. treatment is by blood transfusion with iron chelating agent (desferrioxamine)

- teratology of fallot not present??

anemia-bleeding tendency- cyanosis-clubbing ymkin anemia l2no 3ndhom polycythemia

- 40.All the following are causes of WORM autoimmune hemolytic anemia Except.

a- SLE
b- chronic lymphocytic leukemia
c- methyldopa
d- infectious mononucleosis**********+
e- non-Hodgkins lymphoma

- Splenectomy may be an option in treatment of all the following Except.

a- hereditary spherocytosis
b- idiopathic thrombocytopenic purpura
c- worm autoimmune hemolytic anemia
d- hypersplenism
e- G6PD defecicency

- All the following are long term complications of sickle cell anemia Except.

a- pulmonary hypertension
b- leg ulcer
c- neurological complications
d- aplastic crisis
e- splenomegaly.

- A 52-year-old man presents to his physician after a community health screening test reveals a fasting glucose of 170 mg/dL. Physical examination is remarkable for bronze skin pigmentation, hepatomegaly, splenomegaly, and limitation of motion in the second and third metacarpophalangeal joints of both hands. The man has no known history of hemolytic anemia, and takes daily multivitamins without minerals.

Which ONE of the following pigments is most likely present in the man's liver?
a- Bilirubin
b- Carotene
c- Ferritin **********
d- Lipofuscin
e- Melanin

The pigment most likely present in the man's liver is **Ferritin**, which represents the iron storage form in cells.
Elevated ferritin levels are a hallmark of hemochromatosis.

- All the following are true about thalassemia major Except :

a. Hb electrophoresis shows mainly increase in Hb A2
b. failure to thrive with short stature
c. sever anemia
d. hepatosplenomegaly
e. treatment is by blood transfusion with iron chelating agent (desferrioxamine)

- All the followings are true about pernicious anaemia except Select one:

a. It is a disease of old age.
b. Can be associated with other autoimmune diseases.
c. Intrensic factor antibodies are specific but not sensitive.
d. Treated with oral vitamin B12.

- Periphral neuropathy ..

vit b12

- electrophoresis...

Thalasemia

- X-linked..

G6PD

- B12 def anemia ? Wrong ?

Commonly caused due to Diet deficiency

- Triad of portal vein thrombosis + pancytopenia + hemolysis ?

PNH

- After undergoing surgical resection for carcinoma of stomach, a 60-year-old male develop numbness in the lower limb. Blood film shows macrocytosis and MCV = 120 fl. The abnormality is most likely due to ONE of the following :

a- folic acid
b- Vit. B12 ..... (IF)
C-thiamin
d-Vit. K
e-Riboflavin

- Schistocytes on blood film examination are unlikely to be seen in which of the following?

a. Thrombotic thrombocytopenia purpura (TTP)
b. Thalassemia
c. Vasculitis
d. Glomerulonephritis
e. Hemolytic uremic syndrome

- Splenomegaly may be found in all the following Except.

a. polycythemia rubra vera
b. essential thrombocythemia
c. portal hypertension
d. thalassemia minor.
e. myelofibrosis.

- True regarding Sickle cell disease :

Hand-foot syndrome is associated with swelling and pain at fingers and toes for children and cause disability ???!!!!

- All of the following can inhibit the absorption of ingested non-heme iron except?

a. Alcohol
b. Achlorhydria
c. Phosphate (as found in milk)
d. Phytates (as found in cereals)
e. Antacids

- 35 year old male complaining from fatigue. He denied hx of melena, trauma … cbc shows decrease in Hb, MCV, .. normal RDW ; next step :

A. Occult stool test
B. Iron measurement
C. Hb electrophoresis
D. Lead level

- Deforaxamine

- iron overdose

- A 30-year-old pregnant woman complains to her physician of feeling very tired during her pregnancy. A complete blood count with differential reveals a Hg 10 g/dl, with hypersegmented neutrophils and large red cells. Deficiency of which ONE ofthe following would be most likely to produce these findings?

a- Ascorbic acid
b- Calcium
c- Copper
d- Folate **********
e- Iron

- all of the following may be found in IDA except :

High serum ferritin

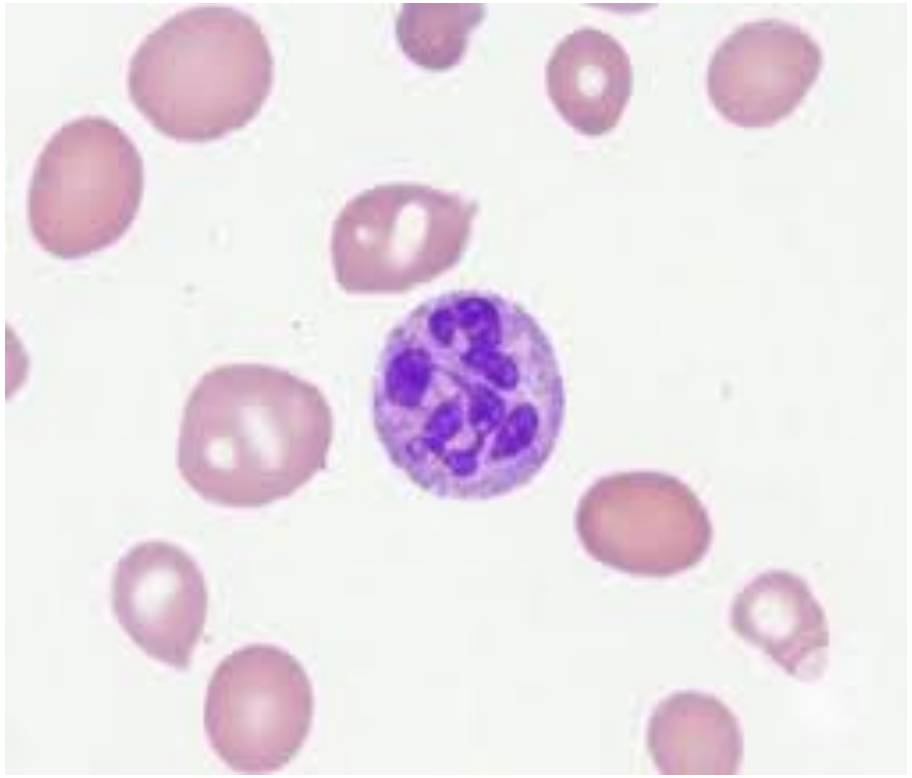
Mini-OSCE

Q1 : the false related to CBC below :
, MCHC : 29 ,Hb: 9 , MCV:74

- Microcytic hypochromic
- **Microcytic normochromic**
- Low reticulocyte count

Q2 : the false answer below :

- Parasthesia
- Elevated LDH
- High RDW
- **Microcytic anemia**



8-This 17 year old male has chronic microcytic hypochromic anemia with target Cells . Your diagnosis is ?

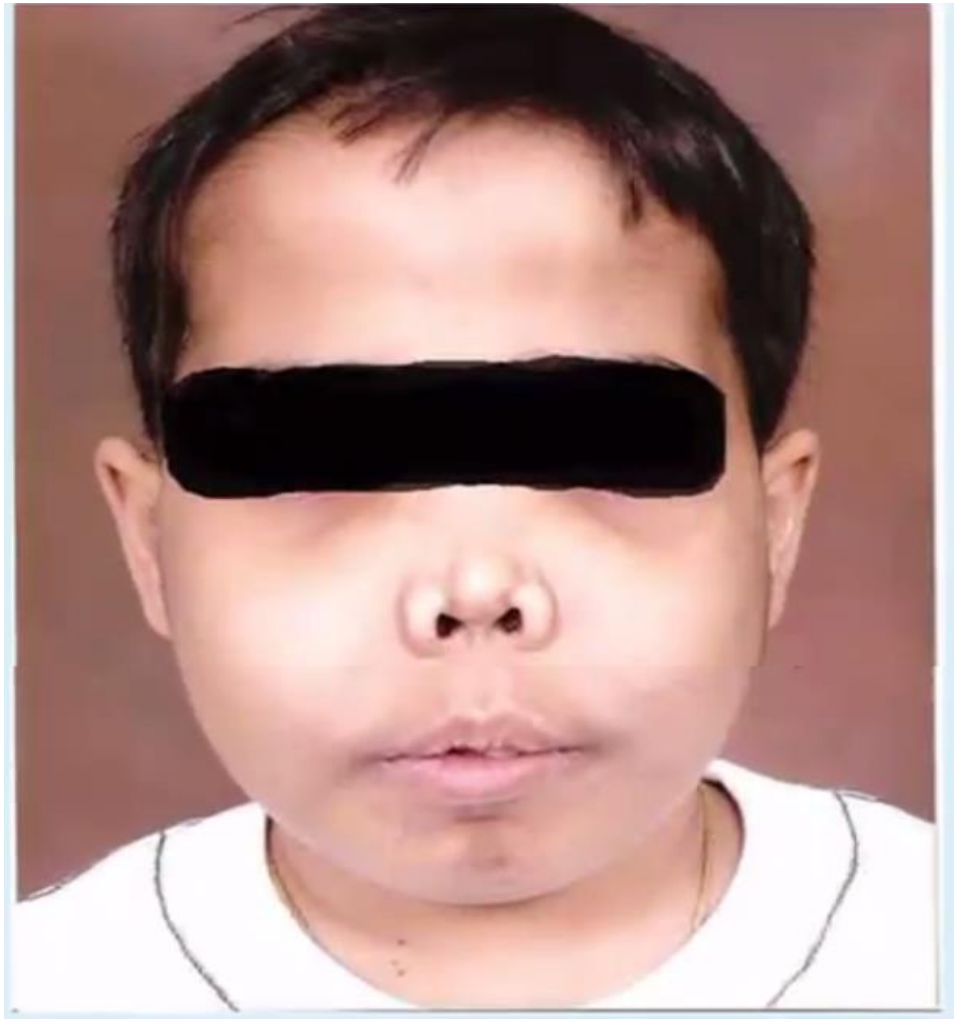
a. **Thalassemia**

b. Hereditary spherocytosis

c. Sickle cell anemia

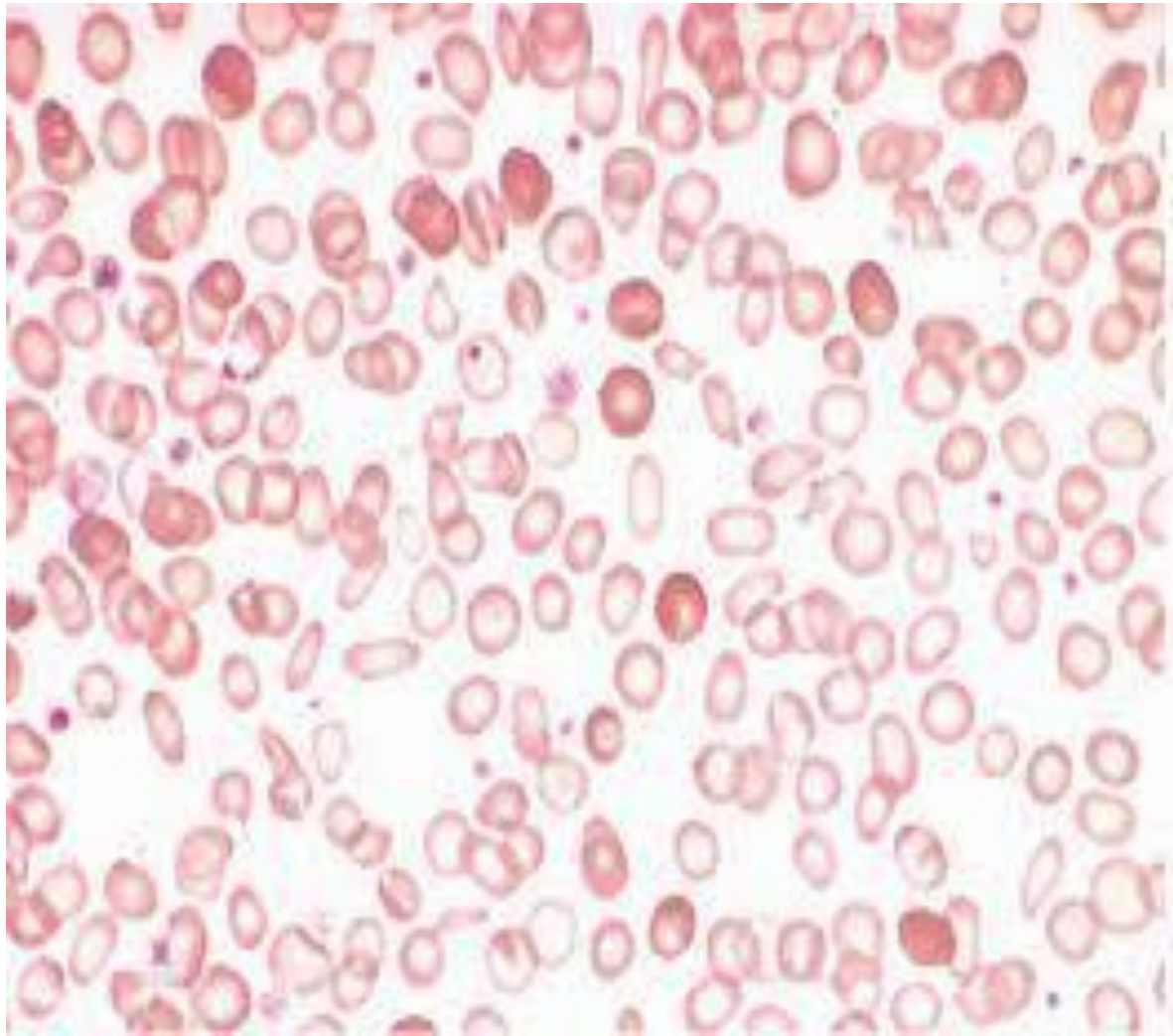
d. Ontogenesis imperfect

e. Acromegaly



Q7

A 29 YO female has become increasingly lethargic for the past 6 months. She complains from SOB, fatigue & tachycardia. Her peripheral blood smear is shown here.



Q1 :What is the Dx?

Iron deficiency anemia

Q2: RDW ?

High RDW

Station 10

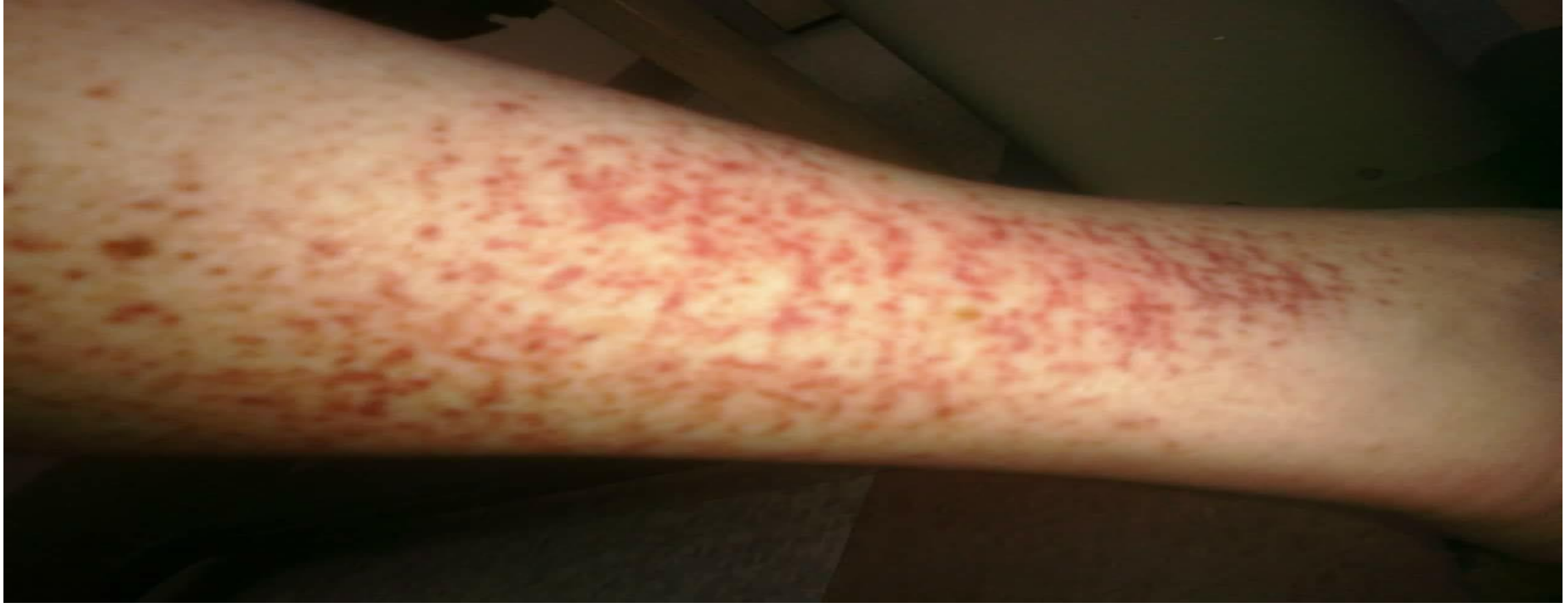
CBC for multipara woman,
low Hb,
low RBC count,
low MCV,
low MCHC .

Q1 : What is your diagnosis?

Microcytic Hypochromic Anemia

Q2 : What is the appropriate investigation?

Ferretin , serum iron , TIBC , transferrin saturation



Station 9

-Mention two causes of this Non-blanching Rash ?

1. Thrombocytopenia (ITP . Aplastic anemia .)
2. Vasculitis
3- Meningiococcemia? (not sure)

Station 10

CBC shows :
Hb : 4
Platelets : 4000
WBC : 2200
MCV : 85
MCHC : 32
WHAT IS THE CASE ?
pancytopenia
Mention 2 causes :
Chemotherapy
Bone marrow fibrosis (myelopthasic disorder)
Aplastic anemia

case 4 : patient presented with general fatigue and weakness after 1 year of gatrectomy , on examination (anemia findigs is present)

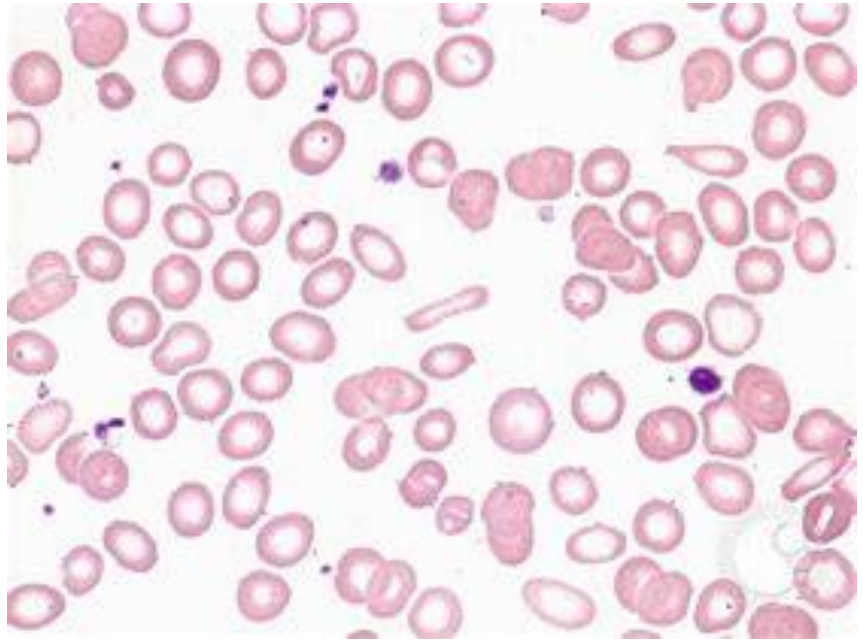
the patient blood film is shown in the picture; all of the following findings are true except :

1- low serum iron

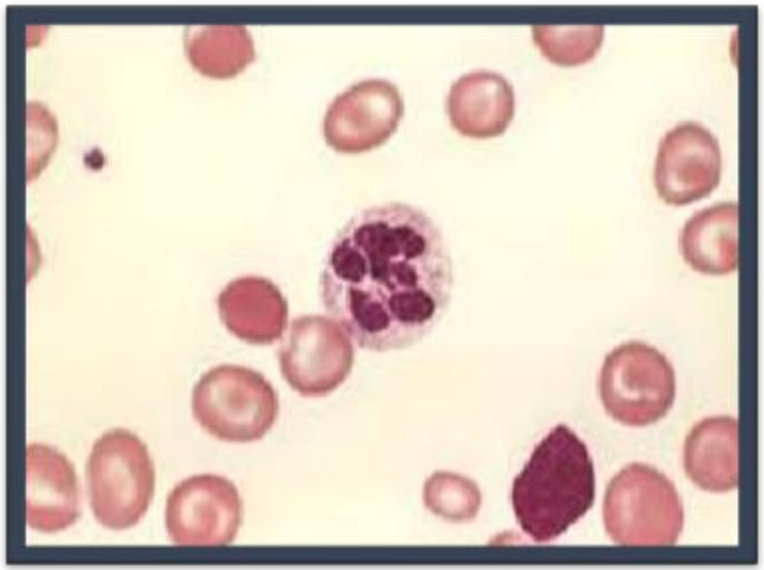
2- low TIBC

3- LOW FERRITIN

4- LOW % TRANSFERRIN SATURATION



A 60 year old patient complains of hypothyroidism and there were pancytopenia



Q1 \ what is the diagnosis?

Pernicious anemia

Q2 \ mention 2 investigations you should order?

1- serology (antibodies to intrinsic factor and parietal cell)

2- vitamin b12 level

Station 7: Table showing values of low MCV, low MCHC, high RDW, low Hg. *normal values were given*

1) What is your diagnosis?

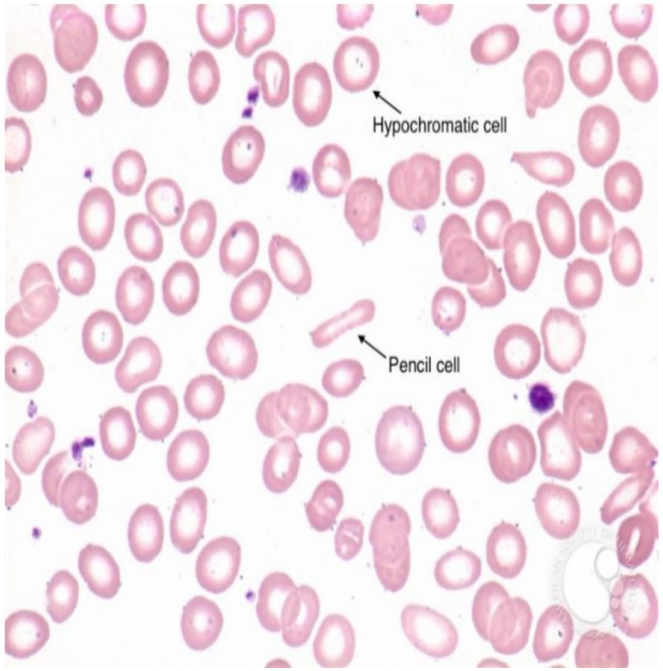
Microcytic hypochromic anemia

1) What is the most likely underlying cause?

IDA iron deficiency anemia

1) What are the investigations to confirm your diagnosis?

Serum ferritin – serum iron – TIBC – transferrin



Pale patient come with fatigue and SOB
Lab results : low HB / low MCV /low MCHC / high RDW)
NOTE : كان بأرقام والنورمال رينج كان محطوط

1)What's mostly the diagnosis? (microcytic hypochromic anemia)

2) give 2 other causes ? هذا السؤال صار عليه اختلاف ,,,
2 :: يلي همة causes for this diagnosis (IDA) فيه طلاب حكو بده

1. Malabsorption 2. poor dietary intake

Or 2 causes as differential diagnosis و همة ::
(TAIL Thalassemia/ anemia of chronic disease/sideroblastic anemia /IDA)

3) Order 2 test to coniform the diagnosis ? (ferritin level/ TIBC/ serum iron…..)

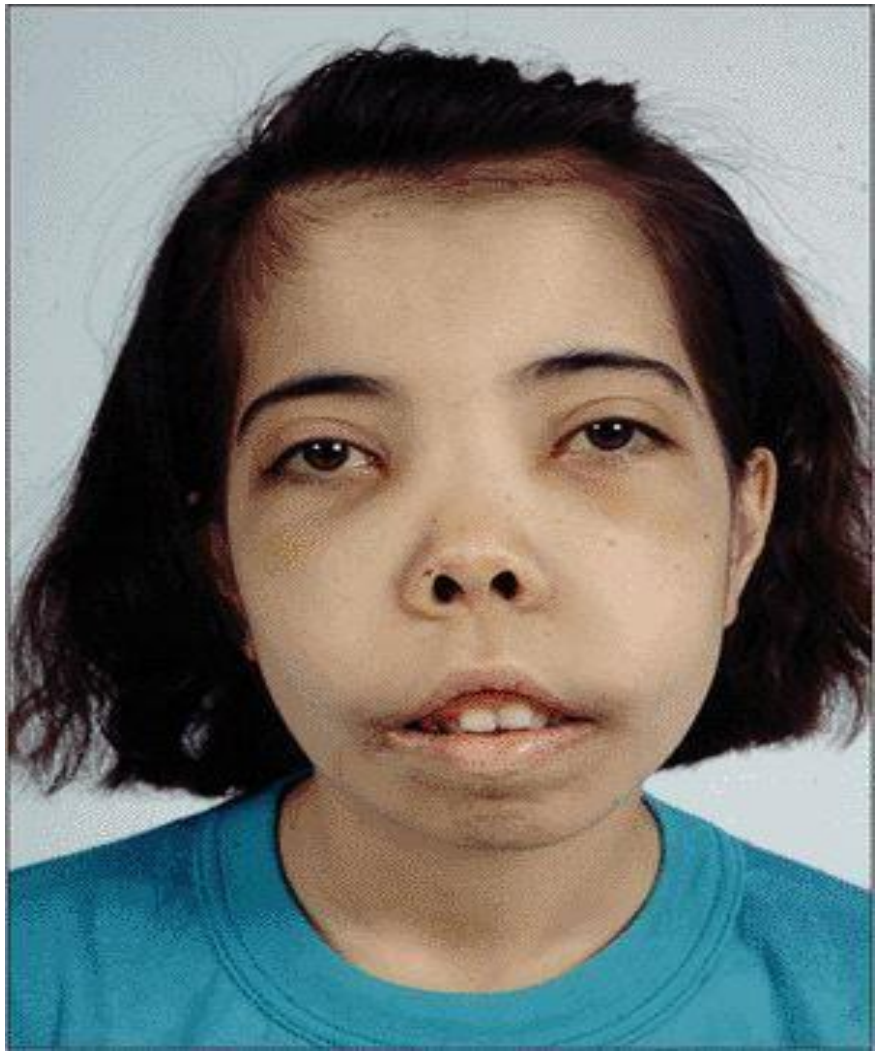
Q 1

- What is the diagnosis ?

Beta thalassemia major

- How would you confirm the diagnosis ?

Hb electrophoresis



Q 2

CBC showing pancytopenia

- What is your diagnosis ?

Pancytopenia

- How to confirm it ?

Bone marrow aspiration

	Patient	Normal range
WBC	3.6	5.0 - 16.0 $X10^3$/MCL
RBC	1.19	3.90 - 5.50 $X10^6$/MCL
Hemoglobin	4.1	11.5 - 14.0 G/DL
Hematocrit	12.5	34.0 - 42.0 %
MCH	33.9	24.0 - 30.0 PG
MCHC	32.5	31.0 - 36.0 G/DL
RDW	17.3	11.0 - 15.0 %
Mean Platelet Volume	10.2	7.5 - 11.5 FL
Platelets	12	140 - 400 x $X10^3$/MCL
Neutrophils	16	17 - 74 %
Bands	1	0 - 1 %
Lymphocytes	83	18 - 80 %

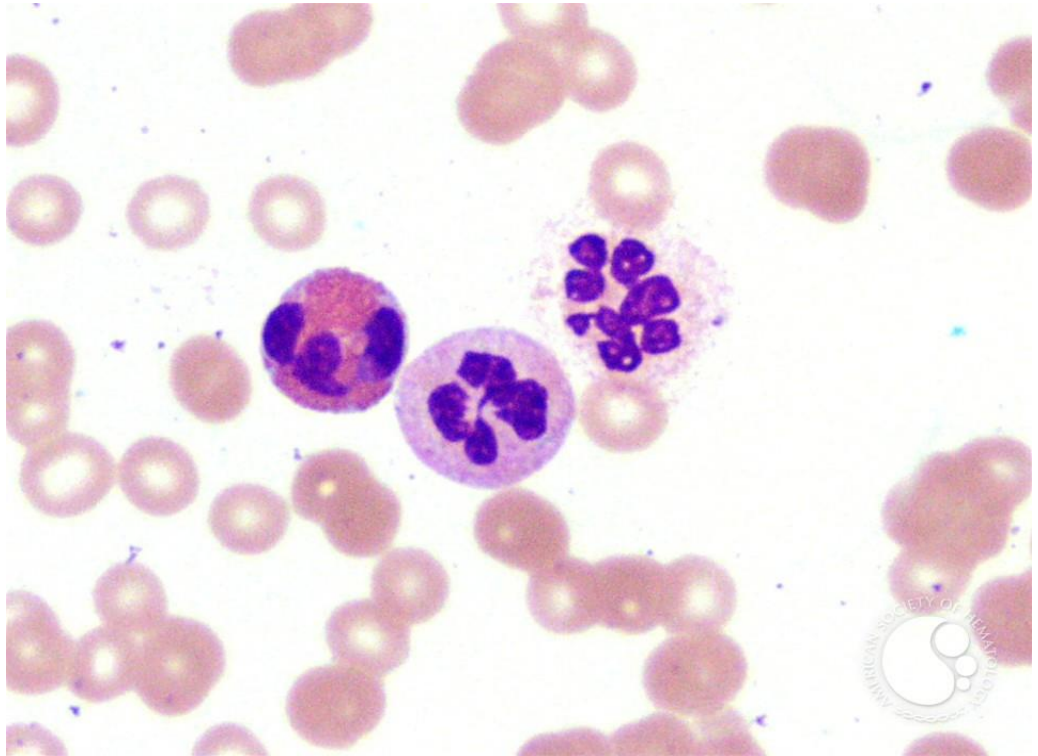
Station 5

Q1 : what condition cause this abnormality

B12 deficiency

Q:2 what abnormality you suspect in erythroblastt?

megaloblast



45 year old woman complaining from palpitation , fatigue and paresthesia in her limbs , all the followings are true except:

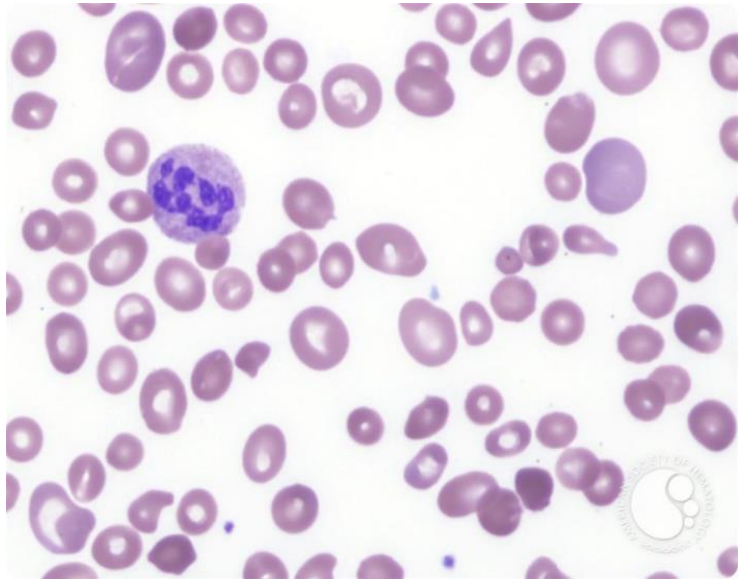
A. Low serum and RBC folate

B. Low serum B12

C. High indirect bilirubin

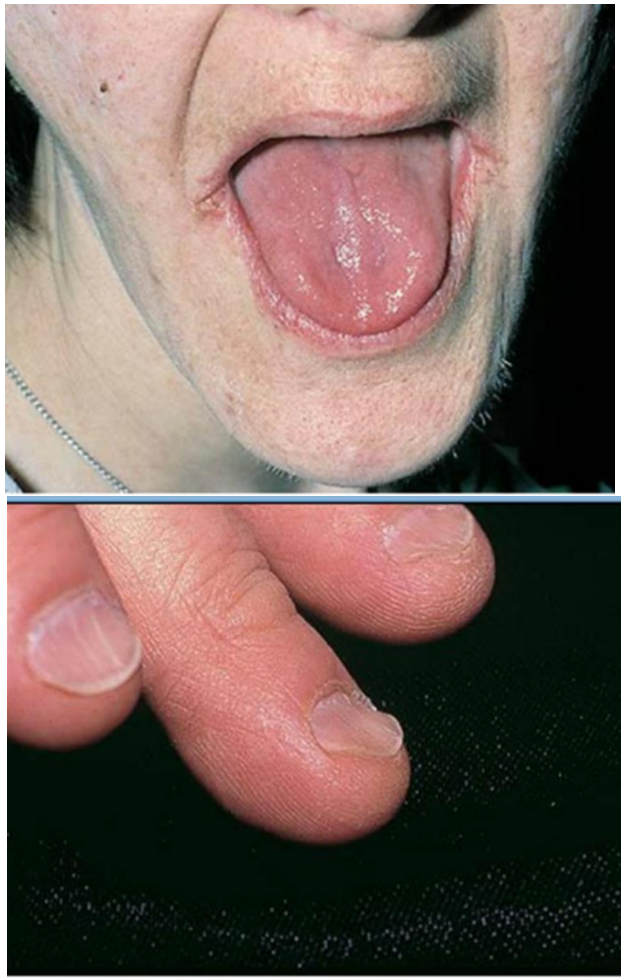
D. Ab against intrinsic factor should be tested

E. High LDH



Q11: one of the following is NOT expected to be present:

- Finger clubbing



Koilonychia in iron-deficiency anemia

Q9) Patient presented with this CBC findings :

LOW MCV
LOW MCHC
HIGH RDW
LOW Hgb

- **Which one of these tests should <u>not</u> be done to confirm diagnosis:**

a) Serum iron
b) Serum ferritin
c) TIBS
d) Transferrin Receptors antibodies
e) Transferrin Saturation

الأجابة من الدكتور ..

((Transferrin Saturation used to diagnosis hemochromatosis)