

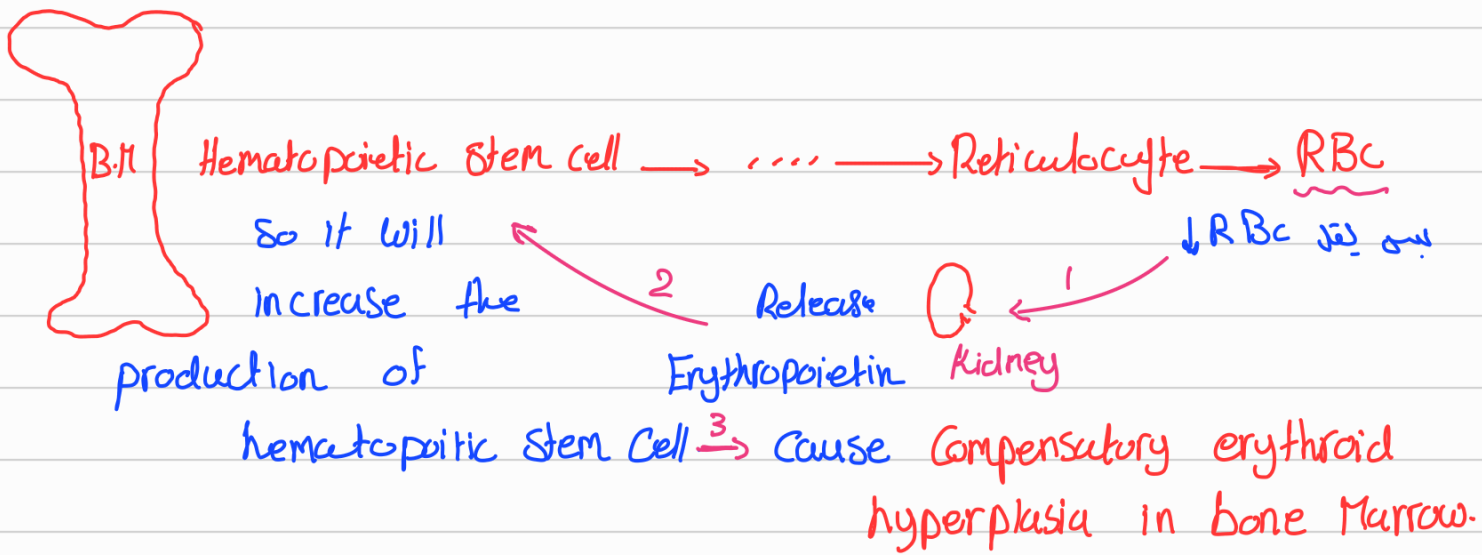
* Lec (2): Anemia \rightarrow \downarrow RBC Mass, Not Number because some type may have Normal RBC count but they are Empty.

Secondary \hookrightarrow hypoxia: \downarrow delivery of O_2 to tissue

extra \leftarrow hypoximixia: \downarrow the pressure of O_2 in Blood so information lead to hypoxia.

① practically

		anemic		
[Hemoglobin concentration	< 13	< 12	< 11
	Hematocrit	Men	women	pregnand women.



• Severe cases \rightarrow $\uparrow\uparrow$ Erythropoietin \rightarrow رخ يحفز انتاج RBC خارج "Erythropoiesis" Bone Marrow \rightarrow "Extra Medullary hematopoiesis" Spleen, liver, lymph nodes.

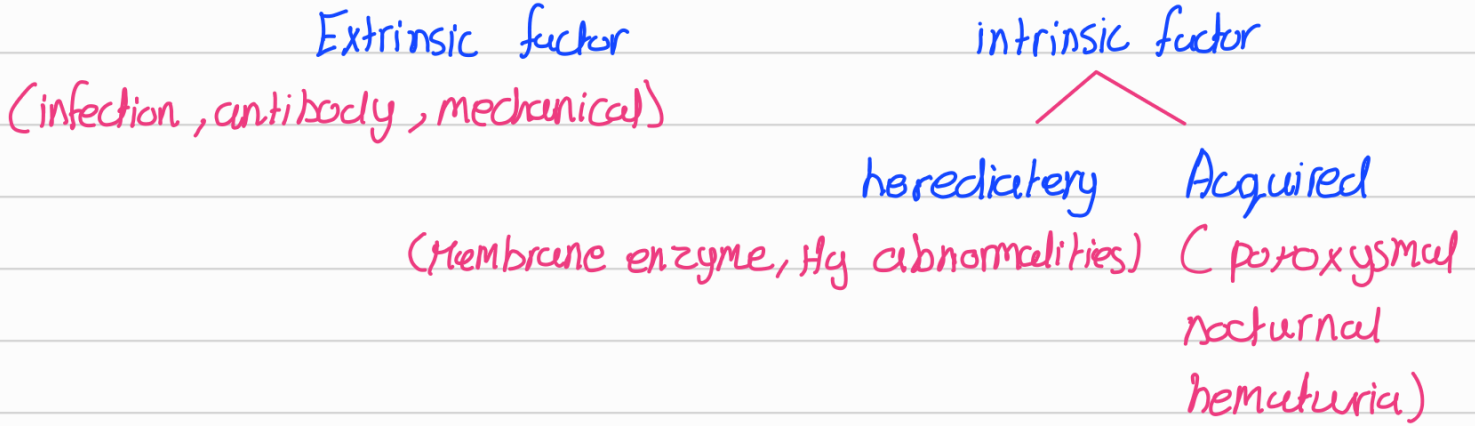
- Anemia of Renal failure
- Anemia of Chronic inflammation \rightarrow \downarrow Erythropoietin.

② Classification according to:

- a) Cause
- 1 Blood loss \rightarrow Acute / Chronic
 - 2 Diminished RBC production: \downarrow RBC Synthesis
9 types of anemia written the slides. check them out.

3 Increased destruction (Hemolytic anemia)

تدمير الـ RBC بسبب hemolysis إما في عروق داخلية أو خارجية



b) Morphology: • $MCV = \text{Mean Cell Volume}$ normo-cytic, Microcytic, Macrocytic

80-100 < 80 > 100

• $MCH = \text{Mean Cell Hemoglobin}$ Normo, hypochromic

28-34 < 28

• Shape: An-is-o-po-ki-ko-cy-tosis Anisocytosis: RBC اختلاف في حجم

اختلاف في الحجم والشكل po-ki-ko-cy-tosis: RBC اختلاف في شكل خلايا

- hypochromic Microcytic anemia: hemoglobin مسكوة في تصنيع الـ

- Macrocytic anemia: stem cell او Maturation مسكوة في الـ

• Geographic areas, Sex, age, Race, Mobility status have an effect.

• hemolytic anemia → ↑ Reticulocyte.

• Generative anemia → ↓ Reticulocyte.

3 Symptoms: Dizziness, fatigue, pallor, headache

- Adaptive change: Tachycardia, Tachypnea ↑ Breathing Rate,

→ special types of Anemia.

- chronic hemolytic anemia: jaundice, pigmented Gall bladder stone.
- Extra Medullary hematopoiesis: splenomegaly, hepatomegaly.
- Thalassemia Major and Sickle cell anemia:

Growth retardation, bone deformity, Secondary hemochromatosis

④ Blood loss Acute: normochromic, normocytic, Reticulocytosis
↓ intravascular volume.

loss > 20% → hypovolemic shock → death
(2-3 days) ↪ survive Shifting fluid from interstitial fluid to
intravascular space cause dilutional anemia, hypoxia

(5-7 days) → Activating BM Erythropoiesis.

internal hemorrhage → iron restored

External hemorrhage → iron lost → IDA

2 Chronic: RBC loss > Regeneration. ↓ iron
hypochromic, Microcytic, ↓ Reticulocyte
occurs in: Gestational diseases, excessive Menstruation.

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