

RBC parameters/iron studies/blood smear

Microcytic anemia

Iron deficiency

inc. RDW; high TIBC/transferrin, low transferrin saturation, low ferritin; Mentzer Index over 13 (MCV/RBC ratio)

Thalassemia

normal RDW; iron studies may be normal (or serum iron may be increased); Mentzer Index under 13 (very low MCV/higher RBC count than in IDA); target cells, teardrop cells; beta thalassemia (inc. HbA₂, HbF); alpha thalassemia (inc. HbH [beta chain tetramer])

Anemia chronic disease

low iron, low TIBC, high ferritin, low transferrin saturation

Sideroblastic anemia

high iron, normal/low TIBC, high transferrin sat., high ferritin; ringed sideroblasts in marrow; peripheral basophilic stippling

* Microcytic anemia with possible normal iron: thalassemia

* Patient can still have iron defic. anemia with a high ferritin if they also have anemia of chronic disease

*Iron deficiency anemia: low transferrin saturation w low ferritin

vs. anemia of chronic disease: low transferrin saturation w high ferritin

Hemochromatosis

high iron, low TIBC, high transferrin saturation, high ferritin

Anemia: bone marrow, blood smear findings

Thalassemia: target cells, teardrop cells; anisopoikilocytosis

Sideroblastic anemia/lead poisoning: ringed sideroblasts in marrow; peripheral basophilic stippling (rRNA), Pappenheimer bodies (iron granules)

Hereditary spherocytosis; autoimmune hemolytic anemia: spherocytes (hereditary spherocytosis Coombs negative)

G6PD deficiency: Heinz bodies (denatured hemoglobin), degmacytes (bite cells)

Sickle cell anemia: Howell-Jolly bodies (retained DNA)

Micro/macroangiopathic hemolytic anemia: schistocytes

B12/folate deficiency: hypersegmented neutrophils

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