

Teaching topics : Red cells and bleeding disorders

Teaching outline :

A. Screening tests for blood disorders

B. Disorders of Red Blood Cells

Anemia

1. Classification of Anemia According to Underlying Mechanism

a). Hemorrhage: Blood Loss Anemia

b). Increased rate of RBC destruction—Hemolytic anemia

Intrinsic abnormalities of RBC

Hereditary-- membrane disorders (*Spherocytosis*; Elliptocytosis)

enzyme deficiencies (Glycolytic; Hexose monophosphate shunt: *G6PD*, glutathione synthetase)

Disorder of hemoglobin synthesis (Thalassemia; hemoglobinopathies: *Sickle cell anemia*)

Extrinsic-- Antibody mediated: isohemagglutinins; autoantibodies

Mechanical trauma: microangiopathic hemolytic anemias (TTP, DIC)

Infectious: malaria

Chemical injury: lead poisoning

Sequestration in mononuclear phagocytic system: hypersplenism

c). Impaired red cell production

Disturbance of proliferation and differentiation of stem cells:

*Aplastic anemia*; pure red cell aplasia

Anemia of renal failure

Endocrine disorders

Disturbance of proliferation and maturation of erythroblasts

Defective DNA synthesis: *Vitamin B12 or folic acid deficiency*

Defective hemoglobin synthesis: *Iron deficiency* , *Thalassemia*

Unknown of multiple mechanism: Sideroblastic anemia, Anemia of chronic disease, Myelophthistic anemias