Anemia in pregnancy

DR NARGES FALEH
MRCOG,MRCPI

objectives

- Definition
- Types
- Effects
- Diagnosis
- Management

DEFINITION

- Anemia is Hb concentration **below**:
- 12 g/dl in non-pregnant women
- 11 g/dl in 1st trimester
- 10.5 g/dl in 2nd & 3rd trimesters
- 10 postpartum

Anemia

- Iron deficiency anemia is the most common hematological problem in pregnancy
- Folate deficiency is the second most common cause of anemia
- Hemoglobinpathies

Hb, MCV, MCH

- Microcytic hypochromic anemia:
- 1. Iron deficiency anemia
- 2. Thalassemia
- 3. Sickle cell disease
- Megaloblastic anemia:
- 1. folate deficiency
- 2. B12 deficiency

Iron deficiency anemia

Physiological changes

- **Hemodilutional anemia**
- Plasma volume increases by 50% and there is a fall in Hb concentration
- MCV & MCHC not changed
- Increase in demand for extra iron especially which cannot be overcome by diet
- Increase in folate requirements
- Increase in vitamin B12 requirements

Causes:

1. Low iron intake:
   - DIET
   - NO supplements
2. Impaired absorption
3. Loss

Causes:

- multiple pregnancy
- Intestinal infestations
- Malaria is a common cause of anemia in pregnancy
- 2-5% of women will have primary post partum hemorrhage
- Blood loss at the time of delivery contributes to iron deficiency in the puerperium

Symptoms:

- **non-specific**
- often dismissed as normal during pregnancy
- often attributed to the physiologic changes of pregnancy
- **Fatigue** is the most common symptom
- Dizziness, palpitations, irritability & dysponea
- Rarely pica develops, where there is a craving for non-food items such as ice and dirt

Effects on pregnancy:

- **FETAL:**
- low birth weight
- small for gestational age size
- preterm birth
- long-term neurocognitive effects in childhood

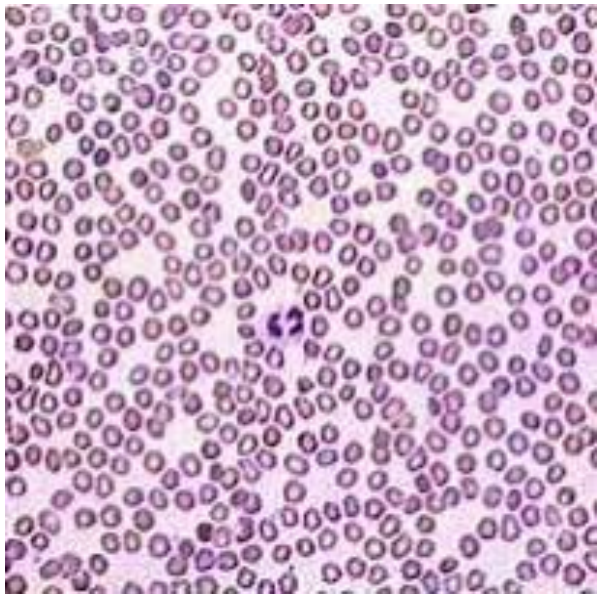
Effects:

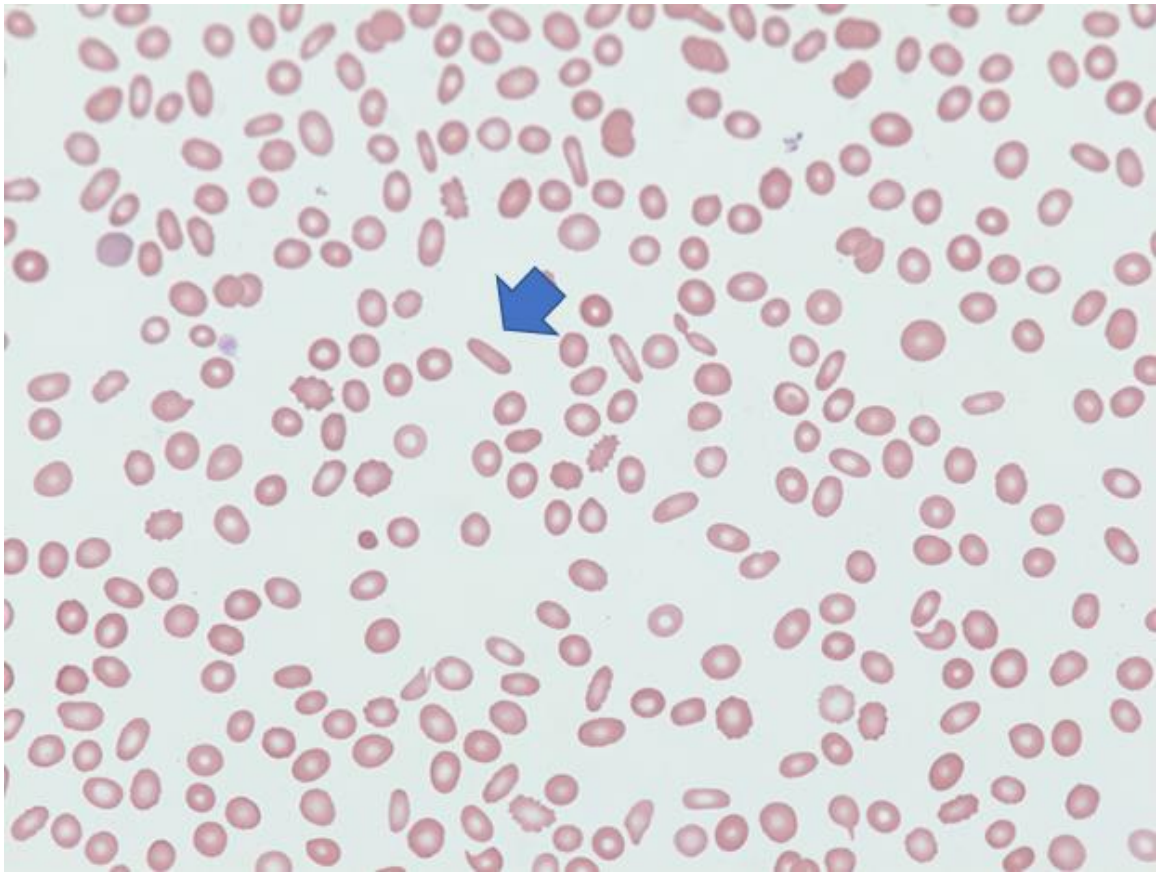
- **MATERNAL:**
- Recurrent infections
- Need for blood transfusion
- postpartum hemorrhage
- Postpartum depression

Diagnosis

1. CBC (low Hb)
   - **Diagnosis should be confirmed:**
   - MCV, MCH, MCHC all reduced
   - The first index to become abnormal is MCV
2. Serum iron < 12 µmol/L
3. TIBG saturation < 15%
4. Serum ferritin < 12 µg/L
5. Blood film :microcytic hypochromic red cells and characteristic ‘pencil cells’

Elliptocytes, also known as ovalocytes or cigar cells





Diagnosis

- **Serum ferritin** provides an accurate assessment of iron stores in the absence of inflammation

- Ferritin and hemoglobin should be routinely assessed at the initial and 28-week prenatal visits

Management

- Increase iron intake
- Enhance absorption

Management

1. Diet

2. Oral iron is the first line of management

3. IV iron

4. Blood transfusion

Diet

Diet

Management

2. Routine supplementation with oral iron to meet the increased demand during pregnancy

Recommended routine supplement:

- Iron 60 mg/ d
- and folic acid 400 µg/ d

Management

- Iron absorption from small intestine enhanced by ascorbic acid and meat

- Inhibitors of absorption include:
- Phytic acid (present in bread)
- Tannins (present in tea, coffee, and **chocolate**)
- Food rich in calcuim

Management

- GI side effects:
- nausea, epigastric pain, costipation
- Side effects are directly related to the dose of iron taken
- Response to oral iron should be evaluated by measuring the hemoglobin level 2–4 weeks after treatment begins
- Treatment should continue for at least 3 months after the hemoglobin level normalizes until 6 weeks postpartum

Management

- for those unable to tolerate oral preparation
- IV iron is safe throughout pregnancy
- Maximum rise in Hb with either oral or parenteral iron is 0.8g/dL per week

Management

- Iron deficiency in late pregnancy may necessitate blood transfusion if Hb < 8 g/dl

Megaloblastic anemia

- Folate deficiency
- B12 deficiency

Folate Deficiency Anemia

- Folate deficiency is the second most common cause of anemia

Folate Deficiency Anemia

- Folic acid is necessary for:
- CLOSURE OF NEURAL TUBEduring early fetal development

Folate Deficiency Anemia

- All women planning pregnancy are advised to take **400 µg /d folate**
- for 12 weeks pre-pregnancy
- and during the first trimester
- to reduce the risk of neural tube defects and other fetal anomalies

When to give folic acid 5 mg/day (high-dose)

- Women whom themselves have spina bifida
- Previous fetus with neural tube defect
- Taking anti-epileptic drugs or sulfasalazine
- Diabetics
- Obesity BMI > 30
- Hemoglobinopathies
- Malabsorption
- Proven folate deficiency

Hemoglobinopathies

1. Thalassaemia (reduced production of normal Hb)
2. Sickle cell (abnormal Hb S, c)

Hemoglobinopathies

- In adults, these are normal percentages of different hemoglobin molecules:
- HbA: 95% to 98% (0.95 to 0.98)
- HbA2: 2% to 3% (0.02 to 0.03)
- HbF: 0.8% to 2% (0.008 to 0.02)
- HbS: Absent
- HbC: Absent

Hemoglobinopathies

- Autosomal recessive
- Carriers (Trait) **OR** diseased
- Diagnosis by Hb electrophresis
- Offer them PGD (prenatal genetic diagnosis) if her husband is a carrier

THALASSEMIA

- The commonest genetic blood disorder
- There is reduced production of normal Hb
- Alpha/ beta

Management:

1. Multidisplenary team
2. Screening for iron overload (e.g LFT and cardiac echo)

Cardiac Failure is the primary cause of death

3. Iron Chelation

(Desferrioxamine: safe from 20 weeks, SC antenatally & IV in Labor)

4. Serial growth scan from 20 weeks
5. Maintain Hb 10 (Transfusions)
6. Folate 5 mg/d
7. low dose Aspirin
8. Postnatal Thrombo Prophylaxis (LMWH).

Sickle cell anemia

- Hereditary disorders in which the red cells contain Hb-S
- Produced by substitution of valine for glutamic acid at the position 6 of the β-chain of normal haemoglobin
- Deoxygenated state, hemoglobin aggregates causing the red cells to sickle.

Effects on the disease

- There is chance of sickle cell crisis
- which usually occurs in the last trimester

- Hemolytic crisis

- Painful crisis.

Effects on pregnancy

- Maternal:
- Anemia
- Recurrent infections
- Chronic hyperbilirubinemia
- Acute chest syndrome
- Pre-eclampsia
- Venous thromboembolism
- Death

Effects on pregnancy

- Fetal:
- Miscarriage
- Fetal growth restriction
- Premature labour
- Placental abruptio

Management

- Multidisplenary team
- prevent crises:
- (hypoxia, stress, infection, hemorrhage)
- Correct anemia
- Prevent infections
- Folic acid 5 mg/d
- Low dose Aspirin from early pregnancy
- Serial growth scan from 20 weeks
- Postnatal Thrombo Prophylaxis (LMWH)


Thank you!