

# Hematology

## Anaemia



### Chief Complaint:

Symptoms of anaemia (fatigue, palpitations, dyspnoea, headache, postural dizziness, angina of effort, Jaundice (haemolytic))

Question	Indication
<b>Duration:</b>	
When did it start?	<ul style="list-style-type: none"><li>• <u>Gradual onset</u>, long duration and gradual progression of the symptoms:<ol style="list-style-type: none"><li>1- Nutritional anemia</li><li>2- Anemia of chronic disease</li><li>3- Chronic hemolytic anemia</li></ol></li><li>• <u>Rapid onset</u>, long duration and rapid progress:<ol style="list-style-type: none"><li>1- Acute leukemia</li><li>2- acute hemolytic anemia</li></ol></li></ul>
<b>Onset:</b>	
Was it sudden or gradual?	
<b>Course:</b>	
Is it getting worse?	
<b>Severity:</b>	
Do you have chest pain?	Urgent need for transfusion.
Blurred vision, difficulty paying attention-making decision? (cerebral Hypoxia)	
Has it affected your daily activities?	
<b>Risk factors:</b>	
What's your diet like? / did you change it?	Vegetarian diet (iron and vitamin B12 deficiency anemias).

Have you had heavy nosebleeds?	
Have you vomited any blood 'coffee grounds'?	
Have you coughed up any blood	
Have you noticed any bleeding per rectum?	
Have you noticed black bowel motions?	
Have you noticed any blood in your urine?	
Have you had problems with stomach ulcers?	
Have you been taking arthritis tablets or <b>blood thinning drugs</b> ?	
If the patient is female, Have you had heavy menstruation? Ask about the frequency and duration of periods and the use of pads or tampons	
<b>Ask about Constitutional symptoms:</b>	
Fever, loss of appetite and weight loss	
<b>Ask about other symptoms of anemia:</b>	
Fatigue, palpitations, dyspnea on exertion , headache, postural dizziness, angina of effort, Jaundice	
<b>Ask about features of bone marrow failure:</b>	
Bruising, recurrent or unusual infections	
<b>Ask about possible malabsorption symptoms:</b>	
Diarrhea or steatorrhea	
<b>Past medical and surgical history:</b>	

History of previous anemia	
History of malabsorption (crohn's disease, celiac disease)	
Liver and kidney diseases Rheumatoid arthritis	Anemia of chronic disease.
Gastric surgery	Vitamin B12 deficiency.
Recent operations	Blood loss
Blood transfusions	
<b>Drug and allergy history:</b>	
Ask about drugs that can provoke gastrointestinal bleeding e.g. aspirin and other non-steroidal anti-inflammatory medications.	
<b>Social history:</b>	
Patient's residency	Sickle cell disease is common in the south of Saudi Arabia.
Occupation	Exposure to benzene is a risk factor for anemia.
Alcohol	
Travel	Consider the possibility of parasitic infections (e.g. hookworm and malaria).
<b>Family history:</b>	
History of Anemia, thalassemia, sickle cell, hemophilia, leukemia or lymphoma.	
<b>Review of systems</b>	

## Examination

### General appearance :

- Is the patient well or unwell?
- Is the patient breathless or shocked due to acute blood loss?

### Hands :

- koilonychias ('spoon'-shaped nails) – *in iron deficiency anemia*
- Cold skin
- Pallor of the palmar creases
- Clubbing
- Telangiectasia
- Check the pulse

### Eyes :

- Jaundice – *in hemolytic anemia*
- Pallor of the conjunctiva

### Mouth :

- Angular stomatitis – *in iron deficiency*
- Glossitis

### Cardiovascular :

- Systolic flow murmur

### Abdomen :

- Is there hepatomegaly, splenomegaly or any abdominal masses

### Legs :

- Bruising, petechiae - *signs of deficient or defective platelets*
- Leg ulcers – *in Sickle cell anemia*
- Are there signs of peripheral neuropathy? - (*This suggests vitamin B12 or folate deficiency*)

### Bones :

- Bone deformities – *in thalassemia major*

### Lymph nodes

### Differential diagnoses:

- Alpha Thalassemia
- Aplastic Anemia
- Beta Thalassemia
- Hemolytic Anemia
- Iron Deficiency Anemia
- Megaloblastic Anemia
- Sickle Cell Anemia

### Investigations :

- CBC with red cells indices (MCV, MCH and MCHC) (hemoglobin of <14 g in adult male and <12 g in adult non pregnant female).
- Examination of peripheral blood smears.
- Iron study for iron deficiency anemia.
- Endoscopy, barium studies and angiography to identify the source of GI blood loss.

### Management :

Anemia treatment depends on the cause.

- Iron deficiency anemia: Treatment for this form of anemia usually involves taking iron supplements and making changes to the diet. If the underlying cause of iron deficiency is loss of blood — other than from menstruation — the source of the bleeding must be located and stopped.
- Vitamin deficiency anemias: Treatment for folic acid and vitamin C deficiency involves dietary supplements and increasing these nutrients in the diet.

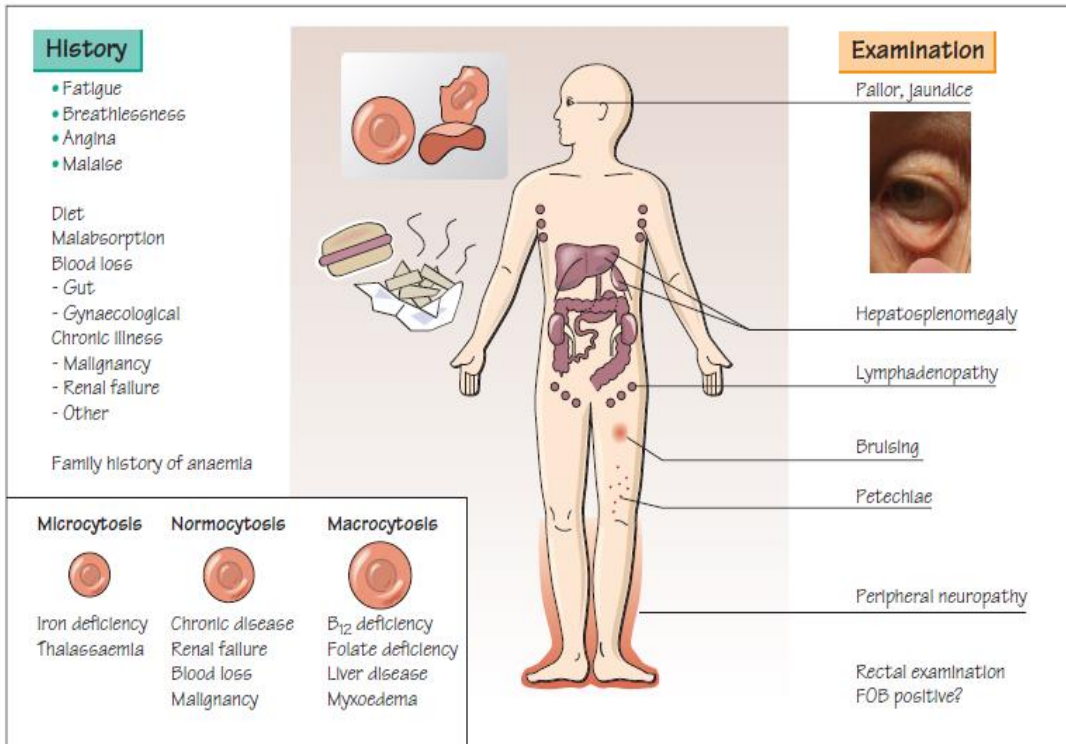
- Anemia of chronic disease: Treat the underlying disease. If symptoms become severe, a blood transfusion or injections of synthetic erythropoietin might be used.
- Aplastic anemia: Treatment for this anemia may include blood transfusions to boost levels of red blood cells.
- Sickle cell anemia: Treatment for this anemia may include the administration of oxygen, pain-relieving drugs, and oral and intravenous fluids to reduce pain and prevent complications. A bone marrow transplant may be an effective treatment in some circumstances. Hydroxyurea is also used to treat sickle cell anemia.
- Thalassemia: This anemia may be treated with blood transfusions, folic acid supplements, medication, removal of the spleen (splenectomy), or a blood and bone marrow stem cell transplant.

### Complications :

- Fatigue and diminished physical capacity.
- Anemia can lead to secondary organ dysfunction or damage, including heart arrhythmia and heart failure.

### Types of Anemia:

- **Microcytic anemia** (MCV<80): Iron deficiency anemia
  - A) Chronic blood loss (heavy periods)
  - B) Dietary deficiency
- **Normocytic anemia** (MCV 80-96):
  - Anemia of chronic disease
- **Macrocytic anemia** (MCV >100):
  - A) Vitamin B12 deficiency
  - B) Folate deficiency



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