APPROACH TO ANEMIA

By

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HISTORY

A detailed history is so importance and often eliminates much of the speculation during investigation. This should include:

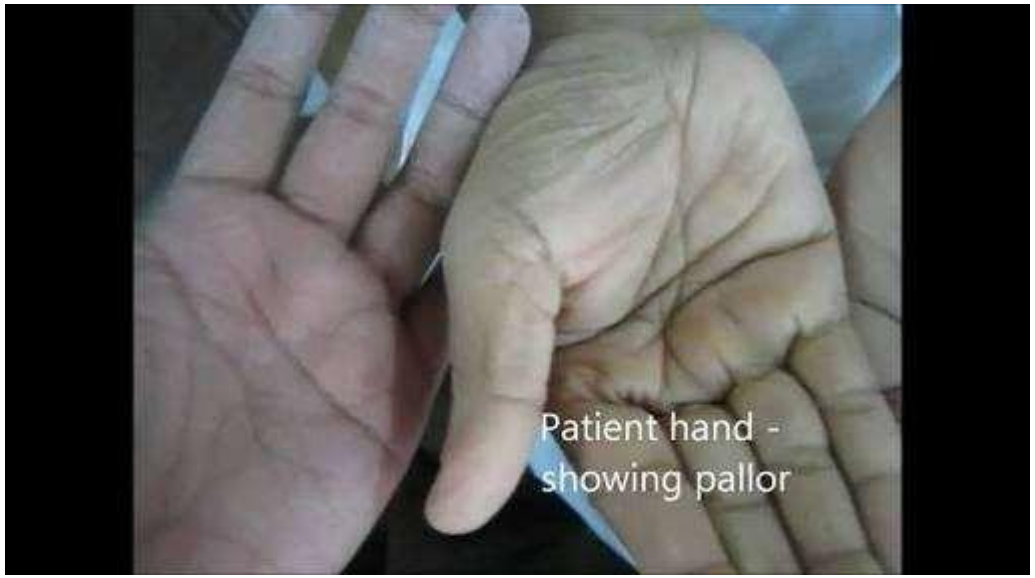
- Duration of the presenting complaint
- Transfusion history
- Dietary history, including pica (craving for unusual food items, generally associated with iron deficiency)
- Travel history (to endemic malarial or other infectious areas)
- Change in bowel habits
- Bleeding (e.G. Gastrointestinal and genito-urinary)

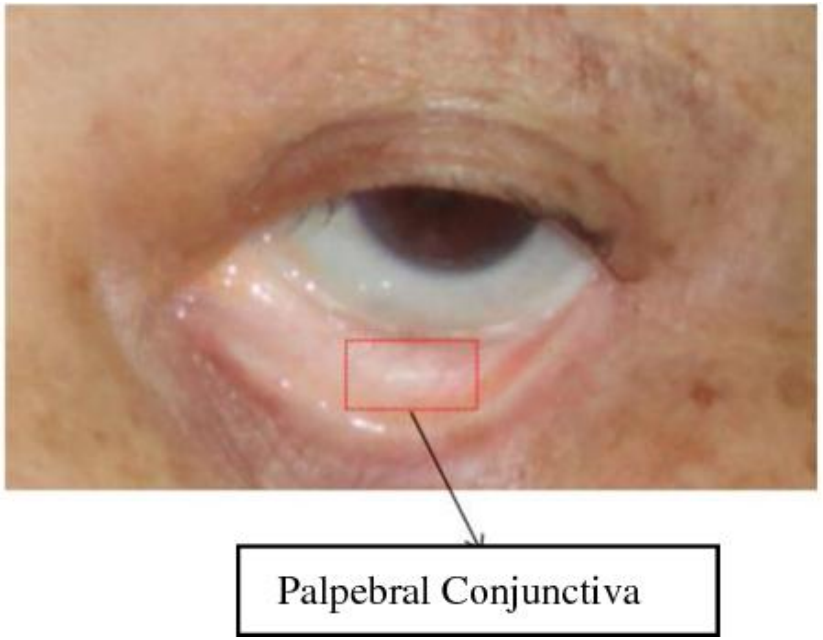
- fever
- Drug history (e.G. Anticoagulants, antiplatelet agents, renotoxic agents, anticonvulsants)
- Chronic disease (e.G. HIV, tuberculosis (TB))
- Surgery (e.G. Gastrectomy, small-bowel surgery)
- Current or recent pregnancy
- Family history (particularly in children).

CLINICAL EXAMINATION

A wide range of signs and symptoms may be apparent. Systematic examination directs further investigation and may reveal the possible cause.

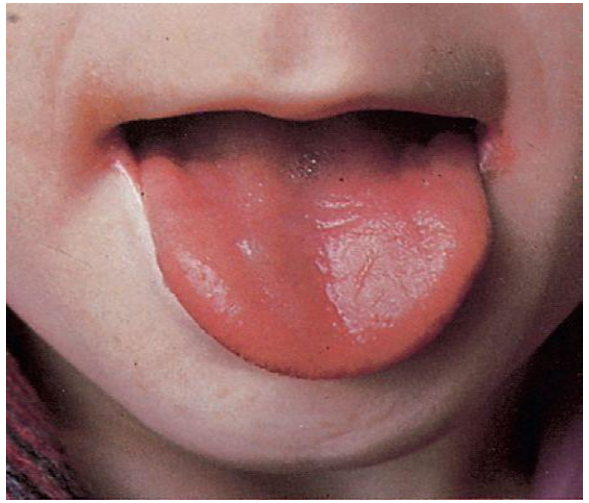
- Skin and mucous membrane:
  - Pallor is the cardinal clinical sign for anemia.

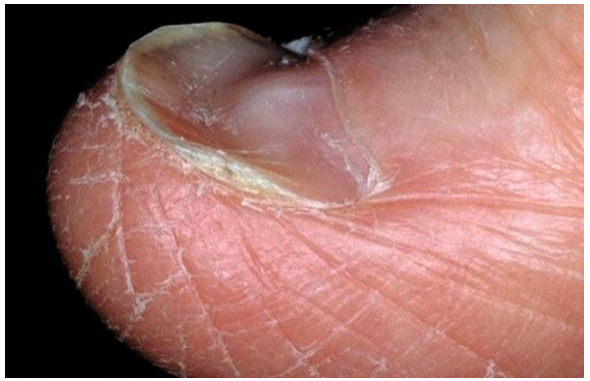




• Angular stomatitis

• Glossitis in nutritional deficiencies



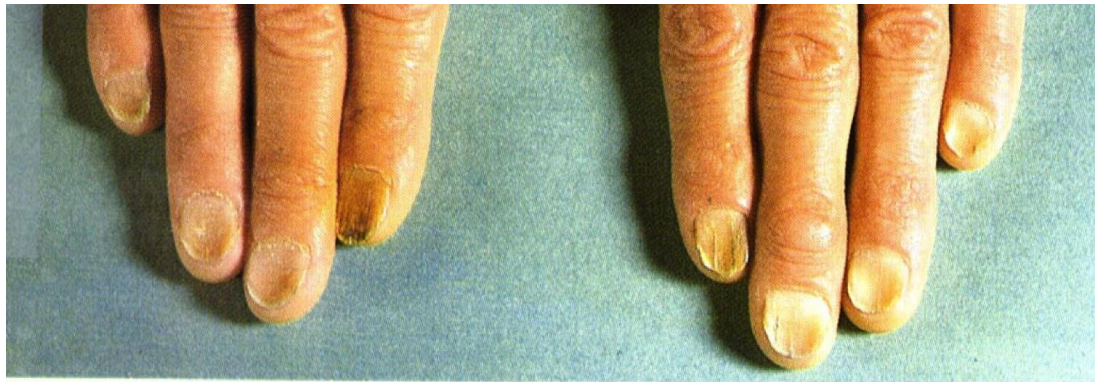


• Koilonychia (spoon-shaped nails) in iron deficiency

• Premature greying, which often accompanies MA

• jaundice, which indicates possible haemolysis

or ineffective erythropoiesis.



Neuromuscular:

- Muscle weakness
- Paraesthesias, peripheral neuropathy, Ataxia and loss of vibration sense, and Proprioception in pernicious anemia.

Cardiovascular:

- Hyperdynamic circulation with hemic ‘flow’ murmurs and collapsing pulse.
- Cardiac failure.

- Clues for infection, malignancy (e.g. lymphoma, leukaemia, metastatic carcinoma):
  - Hepatosplenomegaly
  - Lymphadenopathy
  - Bleeding manifestations (petechiae, purpura, ecchymosis), BM failure.

INVESTIGATIONS

An FBC, differential and reticulocyte counts together with microscopic blood smear examination should be the starting point of investigations. These confirm the clinical suspicion of anemia and direct further investigation.

Table 1. Red cell morphological characteristics

Morphological observation	Significance	Further tests indicated and expected result
Oval macrocytes, teardrops, basophilic stippling, right shift	MA	Serum vitamin B_{12} and folate levels
Hypochromia	Iron deficiency anaemia (also see pencil cells)	Serum ferririn, transferrin and iron levels
Microcytosis	Chronic disorder; thalassaemia trait	Hb electrophoresis/HPLC
Sickle cells	Seen in sickle cell disease	Hb electrophoresis to confirm presence of Hb S, and quantitate Hb F level
Spherocytes	Noted in hereditary spherocytosis, warm AIHA	Coombs test: positive for IgG in warm AIHA Red cell membrane analysis: selected membrane protein abnormalities
Elliptocytes/ovalocytes	Hereditary elliptocytosis/ovalocytosis	Red cell membrane analysis: selected membrane protein abnormalities
Autoagglutination	Cold AIHA	Coombs test: positive for C3d in cold AIHA
Red cell fragmentation	If platelets decreased → microangiopathic haemolysis If platelets normal → macroangiopathic haemolysis	Microangiopathic haemolysis: DIC screen → consumptive coagulopathy U&E: marked renal dysfunction in HUS Altered neurological status: suspect TTP
Malaria	Life-threatening infection	Identify species Monitor FBC and parasite count while on treatment

CASE 1

- A 12 year old white female came to the physician complaining of weakness, lethargy and inability to do work for the past 3 month. Upon questioning she revealed that she just had her first menstrual cycle (menarche) 4 months ago and it lasted for 20 days. Also every month she is having heavy periods. Today is her 15th day . She has breathlessness and palpitations while climbing stairs. Also she had episodes of dizziness but no fainting. Family hx is positive for menorrhagia.
- Vitals: BP= 110/ 74; HR= 115; RR= 16; T= 36.8
- Examination showed overall pallor, pale nail bed , pale conjunctiva and pale gums. No yellow discoloration of the sclera or skin.
- CVS= Heart murmur II/VI.
- Respiratory – Normal breath sound
- Abdomen- Soft lax and non- tender.
- Pelvic- Normal

What is the next step?

<u>CBC</u>:

WBC- 6000

Hb- 5g/dl

RBC count: 3 million/ mm^3 Hct= 18%

MCV- 56 fl

Platelet- 200,000/mm

Reticulocyte-8%