THE PALE CHILD

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Pallor

- **Lacking intensity of colour; colourless or whitish: *a pale complexion.***
- **Not bright or brilliant; dim: *the pale moon.***
- **Of a low degree of saturation, or purity; approaching white or gray: *pale yellow.***
- **Faint or feeble; lacking vigour: *a pale protest.***

PALLOR

- **Clinical sign**
- **Pallor ≠ Anaemia (per definition)**
- **Otherwise healthy child with pallor = most likely anaemia**

Introduction

- **Pathophysiology**
  - Hypoperfusion
  - Anaemia
  - Metabolic
  - Asphyxia
  - Oedema
- **Causes**
- **Approach**

Pathophysiology

- **Hypoperfusion**
  - **Decreased cardiac output**
    - Myocardial insufficiency or mechanical obstruction
    - Metabolic acidosis, hypoxaemia, dysrhythmias
    - Increased peripheral vasoconstriction (afterload)
  - **Hypovolemia**
    - Acute external or internal haemorrhage
    - Vomiting and diarrhoea
    - Occult loss: third space - oedema
  - **Loss of vascular tone (Vasodilatation)**
    - Sepsis
    - Anaphylaxis

Pathophysiology

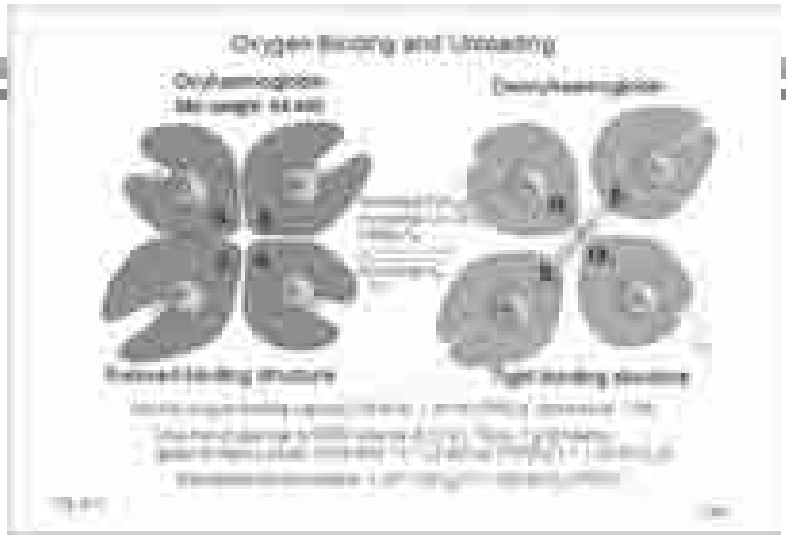
- **Anaemia**
  - Decreased haemoglobin
    - Decreased production
    - Haemolysis
    - Increased destruction
  - Chronic blood loss

Anaemia

- **Haemoglobin is synthesised in the mitochondria of the maturing red cells.**
- **Haemoglobin consists of *globin* (2 α and 2 β polypeptide chains) and 4 prosthetic *haem*-groups**

Anaemia

- **Each haem group is connected to one polypeptide chain, which contain a ring of 4 imidazol-groups.**
- **In the centre of the porphyrin ring the one iron atom is coordinated by 6 ligands**



Pathophysiology

- **Metabolic causes**
  - Hypoglycaemia
- **Oedema**
  - Loss of fluid into the third space
  - Allergy: oedema under inferior border of orbits

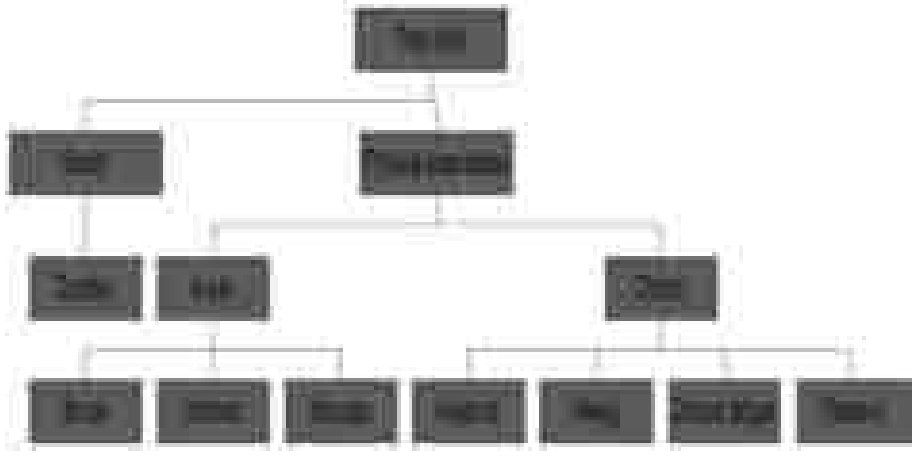
Causes

- Lack of sunlight exposure
- Shock
- Anaemia
- Allergy: "Allergic facies"
- Oedema
- Syncope: vasomotor event: anxiety/hysteria
- Asphyxia
- Chronic fatigue

Approach to the pale child

- Determine whether pallor is acute or chronic
- History
  - Duration
  - Other associated symptoms
- Determine the vital signs
- Observe the colour of the child
  - Skin: not a good indicator for anaemia
  - Mucous membranes of the mouth
  - Conjunctiva
  - Creases of hyperextended hand
- Determine the primary affected system
- Plan investigations and/or management

Approach to a pale child



Anaemia

- Low Hb (below normal range for age) eg. Normal range: 10.3 – 15.5 g/dl
- MCV (Mean corpuscular volume): is a measure of the average red blood cell volume (i.e. size) that is reported as part of a standard complete blood count (77 – 91.5 fl)
- Low MCV = microcytic
- High MCV = macrocytic

Anaemia

- Reticulocyte: RBC precursors
- Reticulocyte count: measures how fast red blood cells called reticulocytes are made by the bone marrow and released into the blood

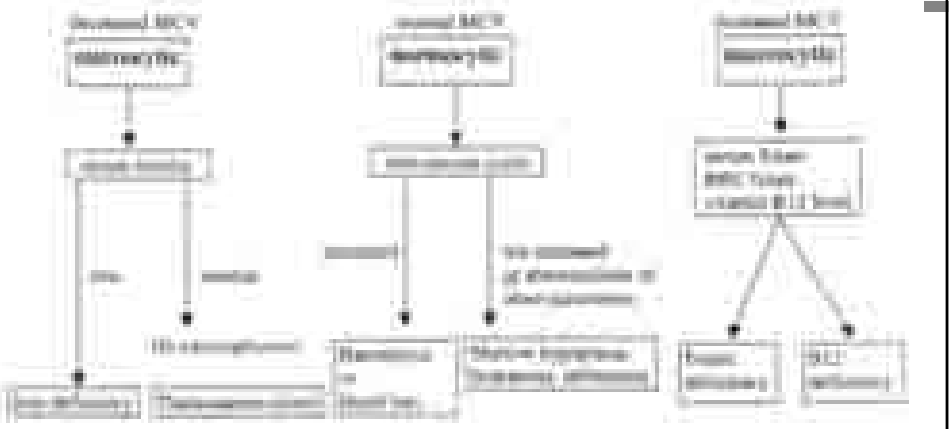
Anaemia

- Reticulocytes are in the blood for about 2 days before developing into mature red blood cells.
- Normally, about 1% to 2% of the red blood cells in the blood are reticulocytes.

Anaemia

- The reticulocyte count rises when there is a lot of blood loss or in certain diseases in which red blood cells are destroyed prematurely, such as hemolytic anemia.
- If low: not enough RBC are being produced by BM

Approach to anaemia



Conclusion

- **Pallor = clinical sign**
- **In not acutely ill child with pallor – Fe def anaemia**
- **Always obtain a good history**
- **Good clinical examination with vital signs**
- **Exclude life-threatening cause**
- **Special investigations**