

REVIEW ARTICLE ON ANAEMIA

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ABSTRACT

Anaemia can be defined by a condition in which the total haemoglobin (Hb) level or number of red blood cells(RBCs) is poorly lowered. Anaemia is an increasing in alarming rate so affecting a large number of children and women in non-industrialized countries, as well as iron deficiency anaemia has potential consequences i.e. IDA reduces the work capacity of individual and entire population and bringing serious economic consequences and obstacles to national development. Asia has the highest rates of anaemia in the world. About half of the world's anaemic women live in the Indian subcontinent and 88% of them develop Anaemia during pregnancy. The situation in Asia is not developed in recent year. There are many type of anaemia. All are very different in their causes and treatments. Iron deficiency is most common from all types where haemoglobinopathies are very rare. With clinical signs and symptoms, investigation are important to diagnose its type. Treatment of all anemias varies according to their seriousness.

INTRODUCTION

Around 30% of the world population is anaemic, iron deficiency is the most common cause.^[1] It is the blood disorder characterized by abnormally low levels of healthy RBC cells that delivers oxygen to tissues throughout the body. The reduction of any or all of these blood parameters reduces the essential delivery of oxygen through the bloodstream to the organs of the body.^[2]

The world health organization (WHO) defines anaemia as Hb <130 g/L in adult males; and <120g/L in adult female.^[3]

DEFINATION

It is state in which level of the Hb% in the blood is below the reference range appropriate for age and sex.^[1]

If you have too few or abnormal red blood cells, or your haemoglobin is abnormal or low, the cells in your body will not get enough oxygen.^[4]

PATHOPHYSIOLOGY

As the Hb level decreases oxygen carrying capacity of the blood also decreases. This, in turn, initiates compensatory physiologic adaptations such as, Increased release of oxygen from haemoglobin. Increased blood flow to the tissues; Maintenance of blood volume; and Redistribution of blood flow to maintain the cerebral blood supply

Gradually tissue hypoxia developed and tissues function are impaired and degree of impairment of individual tissues varies according to oxygen requirement.

Tissues such as heart, skeletal muscle during exercise, CNS requires more oxygen supply, so they are affected by anaemia.^[5]

SYMPTOMS

Tiredness, Breathlessness, Lack of concentration, Insomnia, Tinnitus, Menstrual irregularities, light headness, Worseness of coexisting diseases.^[1]

SIGNS

Mucous membrane, Pallor, Tachypnea, Raised JVP, Flow murmur, Ankle oedema, Postural hypotension, tachycardia.^[1]

TYPES

- Iron deficiency anaemia^[1]

Most common type of anaemia. This occurs when iron losses exceed absorption. Blood loss, malabsorption, physiological demands are main cause of iron deficiency anaemia.

- Anaemia of chronic diseases^[1]

Person suffering from chronic disease, chronic inflammation, chronic infection and neoplasm suffers from anaemia of chronic diseases. Hepsidin, a key regulatory protein, inhibits the export of iron from cells, resulting in anaemia despite high iron stores.

- Megaloblastic anaemia^[3]

Vitamin B12 or folic acid, deficiency of both of them can cause megaloblastic anaemia. This impairs the synthesis DNA require for formation of RBC.

- Aplastic anaemia

Rare disorder in Europe and North America. It is characterized by failure of the pluripotent stem cells resulting in hypoplasia of the bone marrow with pancytopenia.

A. Primary aplastic anaemia

- a. Fanconi's anaemia.
- b. Immune cause.

B. Secondary aplastic anaemia

It is caused secondary to variety of industrial, physical, chemical, iatrogenic and infectious causes.^[5]

- Haemolytic anaemia

Increases destruction of RBC earlier than their lifespan of 120 days.

- a. Extravascular haemolysis - it takes place in liver and spleen. Most common type of haemolytic anaemia.
- b. Intravascular haemolysis^[1]

- Sick cell syndromes (abnormal haemoglobinopathies)

The red cells with HbS develop sickling when they are exposed to low oxygen tension.^[5]

- Thalassemia

Thalassemias are quantitative abnormalities of polypeptides globin chain synthesis.

They are a diverse group of hereditary disorders in which there is reduced rate of the globin polypeptide chain.^[5]

CAUSES

- Due to blood loss

Acute post-haemorrhagic anaemia.

Chronic blood loss.

- Impaired red cell production

a. Cytoplasmic maturation defects.

Deficient haem synthesis.

Iron deficiency anaemia.

b. Deficient globin synthesis.

Thalassemia syndromes.

- Nuclear maturation defects

Vit B12 and or folic acid deficiency (megaloblastic anaemia)

Defects in stem cell proliferation and differentiation

1. Aplastic anaemia.
2. Pure red cell aplasia.
3. Anaemia of chronic disorders.^[5]

INVESTIGATION

Size of RBC accurately indicates by MCV (mean cell volume) in full blood count commonly.

- A normal MCV suggests acute blood loss or anaemia of chronic diseases.
- Low MCV - iron deficiency anaemia and thalassemia.
- High MCV - caused by alcohol, liver disorder, hypothyroidism, splenectomy, hyperlipidemia, pregnancy.
- Iron deficiency is confirmed by a low plasma ferritin level.
- Raised ferritin, reduced TIBC and soluble transferrin receptor help to distinguish anaemia of chronic diseases.
- Decrease serum vit B12, folic acid deficiency, blood film shows macrocytic changes in megaloblastic anaemia.
- Patient with sickle cell disease has a compensated anaemia (usually 60-80g/l) with reticulocytosis and sickle cells on the blood film.^[1]

TREATMENT

Treatment of iron deficiency anaemia involves two components - correction of anaemia and replenishment of iron stores by iron therapy and eradication of the cause of iron deficiency.^[6]

In megaloblastic anaemia injection of hydroxycobalamin IM given and folic acid 5mg daily given according to deficiency.^[1]

Unless the patient has angina heart failure or evidence of cerebral hypoxia, transfusion is not necessary and oral iron supplementation is appropriate, together with treatment of the underlying cause.^[1]

CONCLUSION

Anaemia is a worldwide health problem. Women of developing countries develop anaemia. Nutritional deficiency mainly contributes to the cause of anaemia. As a consequence of severe anaemia, economical loss for management and even mortality rate are also observed. In developing countries high prevalence is seen in women and efforts should be made to detect its type. Although many challenges are to be faced for management of anaemia, effective preventive measures are to be set including health care, dietary management. Medical health check up is all needed to be conducted to detect anaemia and type of anaemia.

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