ANAEMIA

DEFINITION

Decreased ability of the red blood cells to provide adequate oxygen supplies to body tissues. May be due to decreased number of red blood cells, decreased amount of substance in red blood cells, which transports oxygen (haemoglobin), or decreased volume of red blood cells.

SPECIFIC TYPES OF ANAEMIA

1. ANAEMIA OF B12 DEFICIENCY

- A decrease in the red cells in the blood caused by a vitamin deficiency.
- Vitamin B12 is essential for normal nervous system function and normal red cell, white cell and platelet production.

SYMPTOMS

- ☑ Loss of appetite
- ☑ Diarrhoea
- ☑ Numbness and tingling of hands and feet
- ☑ Paleness
- ☑ Shortness of breath
- ☑ Fatigue
- ☑ Weakness
- ☑ Sore mouth and tongue

RISK FACTOR

- Poor diet of vitamin B 12 over a long period time

PREVENTION

- Can be prevented through a well-balanced diet.
- Use of vitamin B12 injections after surgery

SELF CARE

- ✓ Eat a well-balanced diet daily by taking eggs, dairy and other sources of vitamin B12 in animal products.
- ✓ Eat foods rich in iron, such as liver, beef, whole-grain bread, cereals and dried fruit.
- ✓ Eat foods high in folic acid, such as wheat germ, beans, peanut butter, oatmeal, mushrooms, collards, broccoli, beef liver and asparagus
- ✓ Eat foods high in vitamin C, such as citrus fruits and fresh, raw vegetables. Vitamin C makes iron absorption more efficient.
- ✓ Limit the use of tea. It contains tannins, substances that can inhibit iron absorption. Herbal tea is okay though.
- ✓ Have enough sleep and rest.

TREATMENT

- Treat with vitamin B12 injections.
- Oral vitamin replacement in combination with a more balanced diet.

2. ANAEMIA OF CHRONIC DISEASE

- Anaemia develops as a result of long-term infection or disease.
- Diseases cause several changes in the blood production (haematopoietic) system. These include a slightly shortened red blood cell life span, decreases in the amount of iron that is available in the fluid portions of blood, and decreases in the activity of the bone marrow.

SYMPTOMS

- ☑ Presence of a chronic disease or infection
- ☑ Pallor
- ☑ Fatigue
- ☑ Tiredness
- ☑ Headache
- ☑ Lethargy
- ☑ Shortness of breath on exertion
- ☑ Dizziness

RISK FACTORS

- Bacterial endocarditis
- Osteomyelitis
- Juvenile rheumatoid arthritis
- Rheumatic fever
- Crohn's disease
- Ulcerative colitis

PREVENTION

- Treatment of the underlying disease can prevent or reverse the anaemia.

SELF CARE

- ✓ Eat a well-balanced diet daily with food rich in iron, folic acid and vitamin C
- ✓ Don't smoke or drink alcohol.
- ✓ Exercise daily
- ✓ Take care of your health condition.

TREATMENT

- This type of anaemia responds to treatment of the primary disease.

3. ANAEMIA OF FOLATE DEFICIENCY

- Occurs when folic acid levels are low, usually due to inadequate dietary intake or faulty absorption. (during pregnancy.)
- Folate or folic acid is necessary for red blood cell formation and growth.
- The red cells are abnormally large and are referred to as megalocytes, and in the bone marrow as megaloblasts

SYMPTOMS

- Tiredness
- Headache
- Sore mouth and tongue
- Pallor or jaundice

RISK FACTORS

- Poor diet
- Overcooking food
- Alcoholism
- Having a history of malabsorption diseases
- Pregnancy

PREVENTION

- Adequate dietary intake in high-risk individuals and folic acid supplementation during pregnancy may help prevent the onset of this anaemia.

SELF CARE

- Eat good food sources of folic acid daily.
  - These include vegetables like asparagus, Brussel sprouts, spinach, romaine lettuce, collard greens and broccoli.
  - Black-eyed peas, cantaloupe, orange juice, oatmeal, whole grain cereals, wheat germ, liver and other organ meats are excellent sources also.
  - Eat fresh, uncooked fruits and vegetables often. Don't overcook food. Heat destroys folic acid.
- Take a multi-vitamin supplement daily.
- Don't smoke. Smoking increases vitamin needs.
- Don't drink alcoholic beverages

TREATMENT

- Treatment with oral or parenteral folic acid.
- Dietary treatment consists of increasing the intake of green leafy vegetables and citrus.

4. DRUG-INDUCED IMMUNE HAEMOLYTIC ANAEMIA

- Occurs when certain drugs interact with the red blood cell membrane, causing the cell to become antigenic. Antibodies form against the red blood cells. The antibodies combine with the affected red blood cells and result in their premature destruction.

SYMPTOMS

- ☑ Fatigue
- ☑ Pale colour
- ☑ Shortness of breath
- ☑ Rapid heart rate
- ☑ Jaundice
- ☑ Dark urine

RISK FACTORS

Using the drugs that can cause secondary immune haemolytic anaemia like,

- Penicillins
- Cephalosporins
- Levodopa
- Methyldopa
- Mefenamic acid
- Quinidine
- Salicylic acid
- Sulfonamides
- Thiazide
- Diuretics
- Antazoline
- Chlorpromazine
- Isoniazid
- Streptomycin
- Ibuproven

PREVENTION

- If the disorder occurs, the individual should avoid the offending drug and its analogues (similar medications) in the future.

SELF CARE

- ✓ Seek advice from your pharmacist or your doctor before using any drug.
- ✓ Stop using the drug that causes anaemia and look for an alternative drug that does not worsen your anaemia
- ✓ Take an iron supplement.
  - o Consult your physician for proper dosage.

- While iron is best absorbed when taken on an empty stomach, it can upset your stomach. Taking iron with meals is less upsetting to the stomach.

✓ Avoid antacids, phosphates (which are found in soft drinks, beer, ice cream, candy bars, etc.) and the food additive EDTA. These block iron absorption.

✓ Increase dietary fibre to prevent constipation.

✓ Avoid aspirin and products with aspirin.

TREATMENT

- Discontinuation of the suspected causative drug may control the symptoms.
- Treatment with prednisone is the first additional therapy that may be tried.

5. HAEMOLYTIC ANAEMIA

- Occurs when the bone marrow is unable to compensate for premature destruction of red blood cells by increasing their production.
- There are many types of haemolytic anaemia, which are classified by the location of the defect. The defect may be in the red blood cell itself (intrinsic factor) or outside the red blood cell (extrinsic factor).

SYMPTOMS

- ☑ Nose bleeds
- ☑ Gums, bleeding
- ☑ Chills
- ☑ Fatigue
- ☑ Pale colour
- ☑ Shortness of breath
- ☑ Rapid heart rate
- ☑ Jaundice
- ☑ Dark urine
- ☑ Enlarged spleen

RISK FACTORS

- Infection
- Certain medications
- Autoimmune disorders
- Inherited disorders

PREVENTION

- No prevention for haemolytic anaemia.

SELF CARE

✓ Eat more foods which have good sources of iron.

- ✓ Boost your iron absorption by taking food high in vitamin C like citrus fruits, tomatoes, and lemons.
- ✓ Eat well and take prescribed supplements. Increase fiber and fluid intake to prevent constipation.

TREATMENT

- Treatment depends upon the type and cause of the hemolytic anaemia.
- Folic acid, iron replacement, and corticosteroids may be used.

6. HAEMOLYTIC ANAEMIA DUE TO G6PD DEFICIENCY

- G-6-PD deficiency is an inheritable x-linked recessive disorder whose primary effect is the reduction of G-6-PD in the red blood cell, with resultant breakdown of red blood.

SYMPTOMS

- ☑ Fatigue
- ☑ Pale colour
- ☑ Shortness of breath
- ☑ Rapid heart rate
- ☑ Jaundice
- ☑ Dark urine
- ☑ Enlarged spleen

RISK FACTORS

- Black race
- Male
- Having a family history of G6PD deficiency

PREVENTION

- People with G-6-PD must strictly avoid factors that can precipitate an episode, especially drugs known to cause oxidative reactions.
- Genetic counseling or genetic information may be of interest to heterozygous women and affected men.

SELF CARE

- ✓ Do not take any of the medications listed above without consulting your doctor or pharmacist.
- ✓ Avoid taking any fava beans (kacang kuda)
- ✓ Inform any doctor or pharmacist you consult that you have G6PD Deficiency to avoid possible harmful reactions to any treatment that they might prescride.
- ✓ Eat well and take prescribed supplements. Increase fiber and fluid intake to prevent constipation.

TREATMENT

- Treatment will be given if the cause is an infection.
- If the cause is a drug, the offending agent should be stopped.

7. IDIOPATHIC APLASTIC ANAEMIA

- Occur when bone marrow fail to form all types of blood cells properly.
- May be caused by an autoimmune process (when the body reacts against its own cells).

SYMPTOMS

- ☑ Fatigue
- ☑ Pallor
- ☑ Shortness of breath on exertion
- ☑ Rapid heart rate
- ☑ Irregular heartbeat
- ☑ Rash
- ☑ Easy bruising
- ☑ Nose bleeds
- ☑ Bleeding gums
- ☑ Prolonged bleeding
- ☑ Lymph nodes may be enlarged (rare)

RISK FACTOR

There is no known risk factor for idioplastic anemia.

PREVENTION

There is no known prevention for idioplastic anemia.

SELF CARE

- ✓ Do not take any of the medications without consulting your doctor or pharmacist.
- ✓ Empower yourself with knowledge about your disease and how to manage it. This may allow you to make the right decision on how to manage yourself properly.
- ✓ Eat a well-balanced diet rich in iron, folic acid and vitamin C.
- ✓ Have enough sleep and rest.

TREATMENT

- Blood transfusions and platelet transfusions for mild cases of aplastic anaemia.
- Bone marrow transplant for people of 30 years old and under for severe aplastic anaemia.

8. IMMUNE HAEMOLYTIC ANAEMIA

- Occurs when antibodies form against the body's own blood cells.
- The antibodies may be acquired by blood transfusion, pregnancy (if the baby's blood type is different from the mother's), as a complication of another disease, or from the blood cells' reaction to medications.

SYMPTOMS

- ☑ Fatigue
- ☑ Pale colour
- ☑ Shortness of breath
- ☑ Rapid heart rate
- ☑ Jaundice
- ☑ Dark urine
- ☑ Enlarged spleen
- ☑ Joint swelling
- ☑ Joint stiffness
- ☑ Joint pain

RISK FACTORS

Related to the causes.

PREVENTION

Screening for antibodies in donated blood and in the recipient.

SELF CARE

- ✓ Do no take any of the medications without consulting your doctor or pharmacist.
- ✓ Empower yourself with knowledge about your disease and how to manage it. This may allow you to make the right decision on how to manage yourself properly.
- ✓ Eat a well-balanced diet rich in iron, folic acid and vitamin C.
- ✓ Have enough sleep and rest.

TREATMENT

- Treatment with prednisone is the first therapy that is tried. If prednisone does not improve the condition, a splenectomy (removal of the spleen) may be considered.
- Immunosuppressive therapy will be given if the person does not respond to prednisone and splenectomy.
- Blood transfusions are given with caution, if indicated for severe anaemia, because of the potential that blood may not be compatible and precipitate a reaction.

9. IRON DEFICIENCY ANAEMIA

- The most common form of anaemia.
- Occur when too little iron in body that causes a decrease in the red cells of the blood.
- Iron is an essential component of haemoglobin, the oxygen carrying pigment in the blood.
- Iron is normally obtained through the food in the diet and by the recycling of iron from old red blood cells.
- The causes of iron deficiency are too little iron in the diet, poor absorption of iron by the body, and loss of blood, lead poisoning in children.

SYMPTOMS

- ☑ Pale skin color (pallor)
- ☑ Fatigue
- ☑ Irritability
- ☑ Weakness
- ☑ Shortness of breath
- ☑ Orthostatic hypotension
- ☑ Sore throat
- ☑ Brittle nails
- ☑ Unusual food cravings
- ☑ Decreased appetite

- ☑ Headache - frontal

RISK FACTORS

- Peptic ulcer disease
- Long-term aspirin use
- Colon cancer
- Uterine cancer
- Repeated blood donation

SELF CARE

- ✓ Eat more foods that are good sources of iron.
- ✓ Concentrate on green, leafy vegetables, lean, red meat, beef liver, poultry, fish, wheat germ, oysters, dried fruit and iron-fortified cereals.
- ✓ Boost your iron absorption.
- ✓ Foods high in vitamin C - like citrus fruits, tomatoes and strawberries - help your body absorb iron from food.
- ✓ Red meat not only supplies a good amount of iron, it also increases absorption of iron from other food sources.
- ✓ Limit the use of tea. It contains tannins, substances that can inhibit iron absorption. Herbal tea is okay though.
- ✓ Take an iron supplement.
    - o Consult your physician for proper dosage.
    - o While iron is best absorbed when taken on an empty stomach, it can upset your stomach. Taking iron with meals is less upsetting to the stomach.
- ✓ Avoid antacids, phosphates (which are found in soft drinks, beer, ice cream, candy bars, etc.) and the food additive EDTA. These block iron absorption.
- ✓ Increase dietary fibre to prevent constipation.
- ✓ Avoid aspirin and products with aspirin.

PREVENTION

- Dietary sources of iron are red meat, liver, and egg yolk. Flour, bread, and some cereals are fortified with iron.
- During periods of increased requirements such as pregnancy and lactation, increase your dietary intake or take iron supplements.

TREATMENT

- Oral iron supplements of ferrous sulphate. Vitamin C can increase absorption and is essential in the production of haemoglobin.
- Supplemental iron is needed during pregnancy and lactation because normal dietary intake cannot supply the required amount.
- Intravenous or intramuscular iron for patients who cannot tolerate oral forms of iron.

10. MEGALOBLASTIC ANAEMIA

- A blood disorder characterized by red blood cells that are larger than normal, low white blood count, and low platelet count.

SYMPTOMS

- Loss of appetite
- Diarrhoea
- Tingling and numbness of hands and feet
- Pale skin colour
- Tiredness
- Headaches
- Sore mouth and tongue
- Jaundice

RISK FACTORS

- Deficiencies of vitamin B-12 and folic acid.
- Leukemia
- Myelofibrosis
- Multiple myeloma
- Certain hereditary disorders
- Drugs that affect nucleic acid metabolism

PREVENTION

- Adequate intake of vitamin B-12 and folic acid is helpful.

SELF CARE

- Eat a well-balanced diet daily by taking eggs, dairy and other sources of vitamin B12 in animal products
- Eat food rich in iron, such as liver, beef, whole-grain breads, cereals and dried fruit.
- Eat food high in folic acid, such as wheat germ, beans, peanut butter, oatmeal, mushrooms, collards, broccoli, beef liver and asparagus

- ✓ Eat food high in vitamin C, such as citrus fruits and fresh, raw vegetables. Vitamin C makes iron absorption more efficient.
- ✓ Limit the use of tea. It contains tannins, substances that can inhibit iron absorption. Herbal tea is okay though.
- ✓ Have enough sleep and rest.
- ✓ Do no take any of the medications without consulting your doctor or pharmacist.

TREATMENT

- The objective of treatment is to determine the cause of the anaemia, and the treatment will depend upon the cause.

11. PERNICIOUS ANEMIA

- Caused by a lack of intrinsic factor, a substance needed to absorb vitamin B12 from the gastrointestinal tract.
- May result from hereditary factors.

SYMPTOMS

- ☑ Shortness of breath
- ☑ Fatigue
- ☑ Pallor
- ☑ Rapid heart rate
- ☑ Loss of appetite
- ☑ Diarrhoea
- ☑ Poor memory
- ☑ Tingling and numbness
- ☑ Sore mouth
- ☑ Unsteady gait, especially in the dark
- ☑ of hands and feet Slowing of mental processes

RISK FACTORS

- A history of autoimmune endocrine disorders.
- A family history of pernicious anaemia, and of Scandinavian or Northern European descent.
- Diabetes mellitus

- Improper diet, especially a vegetarian diet lacking vitamin B-12 and without supplements.
- Thyroid disease
- Previous stomach surgery, stomach cancer or gastritis
- Bulimia or anorexia nervosa

PREVENTION

- This condition is not preventable.

SELF CARE

- ✓ Eat food rich in iron, such as liver, beef, whole-grain breads and cereals, eggs and dried fruit.
- ✓ Eat food high in folic acid, such as wheat germ, beans, peanut butter, oatmeal, mushrooms, collards, broccoli, beef liver and asparagus
- ✓ Eat food high in vitamin C, such as citrus fruits and fresh, raw vegetables. Vitamin C makes iron absorption more efficient.

TREATMENT

- Vitamin B12 injections are the definitive treatment for this disorder.

12. SECONDARY APLASTIC ANAEMIA

- Occurs when stem cells are injured and causes the reduction in all types of blood cells.
- May be caused by chemotherapy, drug therapy to suppress the immune system, radiation therapy, toxins such as benzene or arsenic, drugs, pregnancy, congenital disorders, infectious hepatitis, and systemic lupus erythematosus.

SYMPTOMS

- ☑ Fatigue
- ☑ Pallor
- ☑ Shortness of breath on exertion
- ☑ Rapid heart rate
- ☑ Heart beat, irregular
- ☑ Rash
- ☑ Easy bruising
- ☑ Nose bleeds
- ☑ Bleeding of the gums
- ☑ Prolonged bleeding

RISK FACTORS

- The risk factors are unknown.

PREVENTION

- This may be an unavoidable consequence of treatments such as chemotherapy.
- Avoid toxins such as benzene or arsenic if possible.

SELF CARE

- ✓ Do not take any medication without consulting with your doctor or pharmacist
- ✓ Tell your doctor that you have aplastic anaemia.

TREATMENT

- Blood transfusions and platelet transfusions for mild cases.
- Bone marrow transplant for people age 40 or below with severe cases.

13. SICKLE CELL ANAEMIA

- Caused by an abnormal type of haemoglobin called haemoglobin S, is inherited as an autosomal recessive trait.
- It occurs in people who have inherited haemoglobin S from both parents.

SYMPTOMS

- ☑ Family history of sickle cell anaemia
- ☑ Fatigue
- ☑ Breathlessness
- ☑ Rapid heart rate
- ☑ Delayed growth and puberty
- ☑ Susceptibility to infections
- ☑ Ulcers on the lower legs (in adolescents and adults)
- ☑ Jaundice
- ☑ Bone pain
- ☑ Attacks of abdominal pain
- ☑ Weakness
- ☑ Joint pain
- ☑ Fever
- ☑ Vomiting

ADDITIONAL SYMPTOMS

- ☑ Urine bloody (haematuria)
- ☑ Urination, excessive volume
- ☑ Thirst, excessive
- ☑ Penis pain
- ☑ Priapism
- ☑ Chest pain
- ☑ Decreased fertility

PREVENTION

- Genetic counseling is recommended for carriers of the trait.
- Prompt treatment of infections, adequate oxygenation, and maintaining normal hydration status may prevent sickling of red blood cells.
- Prenatal diagnosis is now possible for couples at risk of producing a child with sickle cell anaemia.

SELF CARE

- ✓ The best way to help yourself is to learn as much as you can about the disease and to make sure that you get the best health care possible.
- ✓ Taking the vitamin folic acid (folate) daily to help make new red cells
- ✓ Daily penicillin until age six to prevent serious infection
- ✓ Drinking plenty of water daily (8-10 glasses for adults)
- ✓ Avoiding too hot or too cold temperatures
- ✓ Avoiding over exertion and stress
- ✓ Getting plenty of rest
- ✓ Getting regular check-ups from knowledgeable health care providers

TREATMENT

- The objective of therapy is the comprehensive management and control of symptoms relating to crises.

- Folic acid supplementation is for continuous therapy.
- Analgesics and adequate hydration are provided for acute, painful episodes. Blood transfusions may be needed for aplastic or haemolytic crises.

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