



ADVANCED MEDICINE

LECTURE ELEVEN : DISEASE OF BLOOD

Sawa University

جامعة ساوة الاهلية

College of health and medical techniques

كلية التقنيات الصحية والطبية

Department of Anesthesia

قسم تقنيات التخدير

Fourth Stage

المرحلة الرابعة

Lecture eleven

Theoretical

Dr. shaker kadhium

M.Sc. medicine

Blood disorders are conditions that impact the blood's ability to function correctly. Symptoms depend on the type of blood disorder. However, some common symptoms include unexplained fatigue and weight loss.

Most blood disorders decrease the number of cells, proteins, platelets, or nutrients in the blood, or interfere with their function. A majority of blood disorders are caused by mutations in parts of specific genes and can be passed down in families.

Some medical conditions, medications, and lifestyle factors can also cause blood disorders to develop.

The following categories describe blood disorders that cause **a decrease in blood components** or affect their function:

1. **anemia** – if the disorder involves red blood cells
2. **leukopenia** – if the disorder affects white blood cells
3. **thrombocytopenia** – if the disorder concerns platelets

Categories of blood disorders that **increase blood components** are:

1. **erythrocytosis** – if the disorder involves red blood cells
2. **leukocytosis** – if the disorder affects white blood cells
3. **thrombocythemia or thrombocytosis** – if the disorder concerns platelets

Types of white blood cell disorders

White blood cells help the body to fight infection. They begin life in the bone marrow and develop into different types of cells

The major types are:

1. **neutrophils**, which destroy bacteria and viruses
2. **lymphocytes**, which kill viruses and regulate the immune system
3. **monocytes or macrophages**, which eat dead or deactivated bacteria, viruses, and fungus
4. **basophils and eosinophils**, which help the body respond to allergic reactions and help destroy parasites

Most white blood cell disorders are either a type of cancer or proliferative disorders Proliferative disorders involve a rapid increase in the number of white blood cells that are circulating in the blood

Leukopenia, however, is due to a reduction in the amount of circulating white blood cells. Leukopenia usually occurs because of:

- 1. illness**
- 2. infection**
- 3. toxin exposure**
- 4. certain medications, such as corticosteroids or chemotherapy medications**
- 5. genetic mutations**

There are three major types of **blood cancer** that impact white blood cells, and they include the following:

Lymphoma

Lymphoma is a type of cancer that occurs when lymphocytes change and multiply rapidly.

Leukemias

Leukemias involve the build-up of abnormal white blood cells in the bone marrow, which interferes with its ability to produce red blood cells and platelets.

Myelomas

Myelomas involve the build-up of plasma cells in the bone marrow, which interferes with the development and function of other blood cells.

Treatment and diagnosis

A doctor usually diagnoses leukemias, lymphomas, and myelomas using:

- 1. a medical exam and a complete medical history**
- 2. blood tests**
- 3. urine tests**
- 4. bone marrow aspiration and biopsy**
- 5. lumbar puncture (spinal tap), where doctors collect spinal fluid for examination**
- 6. imaging tests, such as X-ray, CT, or PET scans, MRI, and ultrasound**

Blood cell cancers that do not yet cause symptoms may not require treatment aside from monitoring. Doctors usually treat people with aggressive or active blood cancers using some mix of:

- 1. chemotherapy**
- 2. radiation therapy**
- 3. surgery**
- 4. targeted drug therapy**
- 5. stem cell transplants**

Types of red blood cell disorders

Anemias, where there are not enough red blood cells or the cells do not work correctly, are among the most common blood disorders

The most common types are:

1. **iron-deficiency anemias** — when the body does not have enough iron or cannot properly absorb it
2. **pregnancy anemia** — when there is more of a demand for red blood cells than normal
3. **vitamin-deficiency anemias** — usually caused by low dietary intake of vitamin B-12 and folate
4. **non-inherited hemolytic anemias** — where red blood cells are broken and destroyed in the bloodstream abnormally, either by injury, illness, or medications

5. inherited hemolytic anemias — where red blood cells are broken down or destroyed more quickly than the body can replace them

6. aplastic anemias — when the bone marrow stop producing enough blood cells



Treatment

- 1. blood transfusions**
- 2. dietary changes**
- 3. surgery**
- 4. medications that stimulate the production of bone marrow and new red blood cells**

Hemophilia

Hemophilia is a genetic condition caused by a lack of or defective clotting factors in a person's blood. People with hemophilia bleed longer or more excessively, both externally and internally than people without the condition.

Von Willebrand disease

This disease occurs when the body lacks the von Willebrand factor (VWF), a substance that allows platelets to stick together and form clots. Most cases of von Willebrand are relatively mild, and people may only require treatment if they are injured or undergo surgery.

Treating blood clotting disorders typically involves replacement therapy, where the doctor gives a person infusions containing the specific clotting factors they are lacking.

Additional therapies include:

1. **desmopressin** — a synthetic hormone that promotes the release of von Willebrand factor and factor VIII
2. **antifibrinolytic medications** — that help prevent blood clots from breaking down
3. **birth control medications** — to reduce heavy menstrual cycles
4. **Blood transfusions**
5. **corticosteroids to slow platelet destruction**

Symptoms of a blood disorder

Symptoms depend on what part of the blood or organs is affected

Signs of white blood cell disorders

- 1. frequent infections**
- 2. wounds that do not heal or are slow to heal**
- 3. unexplained exhaustion**
- 4. unexplained weight loss**

Signs of red blood cell disorders

1. **unexplained exhaustion**
2. **shortness of breath**
3. **dizziness or light-headedness**
4. **rapid heartbeat**
5. **muscle weakness**
6. **difficulty concentrating and remembering**
7. **pallor**

Signs of platelet and clotting disorders

- 1. difficulty forming blood clots at wounds or controlling bleeding**
- 2. injuries that are slow to heal or keep re-opening**
- 3. unexplainable bruising or skin that easily bruises**
- 4. unexplainable bleeding from the nose, gums, gastrointestinal system, or urogenital system**

QUIZ



What is the treatment of RBS disorder ?

Any questions?

*Thank
You*