



جامعة المستقبل
AL MUSTAQBAL UNIVERSITY

كلية العلوم
قسم الانظمة الطبية الذكية
Lecture: (7)

Subject: **Lymphatic System**

Level: First

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Lymphatic System



lymphatic system


it is network of tissues and organs that help rid the body of toxins, waste and other unwanted materials.

Lymphatic system consist of:

- lymphatic vessels
- lymph nodes the spleen
- other lymphatic organs.

The Main functions of the lymphatic system

The lymphatic system has four main functions that contribute to homeostasis:

- Lymphatic capillaries absorb excess tissue fluid and return it to the bloodstream
 - in the small intestines, lymphatic capillaries called lacteals absorb fats in the form of lipoproteins and transport them to the bloodstream
 - the lymphatic system is responsible for the production, maintenance, and distribution of lymphocytes
 - the lymphatic system helps defend the body against pathogen
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STRUCTURE OF LYMPHATIC SYSTEM

The lymphatic system consists of **lymphatic vessels** and **lymphatic organs**

➤ THE LYMPHATIC VESSELS

LYMPH excessive tissue fluid carried by lymphatic vessels

Collects lymph from lymph capillaries

Delivers lymph to lymph nodes

Returns fluid to circulatory veins near the heart

Fluid & plasma proteins are not all resorbed at the capillary beds and must be returned to the blood to maintain blood volume ..lymphatic vessels accomplish this

One-way system, lymph flows toward the heart Lymph vessels include:

- Microscopic, permeable, blind-ended capillaries
- Lymphatic collecting vessels Trunks and ducts

STRUCTURE OF LYMPHATIC SYSTEM

➤ The lymphatic organs

1. Primary lymphoid organs: Where lymphocytes are generated

a. Bone marrow

lymphocytes are mature in bone marrow

Produce plasma cells, which secrete antibodies

Antibodies immobilize antigens and "tag" them for destruction by leukocytes (WBCs)

STRUCTURE OF LYMPHATIC SYSTEM

➤ The lymphatic organs

b. Thymus gland

lymphocytes are mature in thymus

Manage the immune response

Attack and destroy foreign cells

2. Secondary lymphoid organs: initiate adaptive immune responses

- Lymph node
- Spleen
- Appendix Peyer's patches
- Tonsils

Lymphoid organ

1- Lymph nodes

It is a small, bean-shaped organ that serves as a filtering and processing center for your immune system.

*Approximately 600 lymph nodes are scattered throughout the human body. They can exist singly or in closely connected groups called chains.

*Lymph nodes are connected to their neighbors by a sort of network of tubes called lymphatic vessels.

*lymph: it's a clear fluid contains more white blood cells than plasma

Lymphoid organ

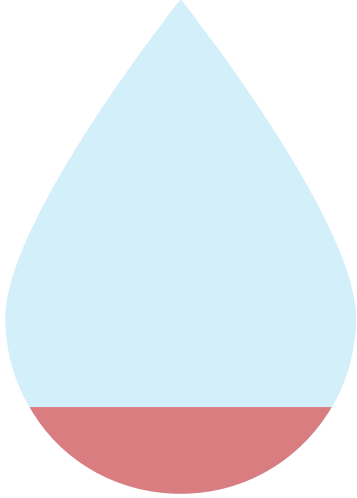
Lymphocytes

- 1- They detect if there is any viruses or bacteria in the lymphatic fluid.
- 2 -They produce antibodies to combat viruses and bacteria.

Macrophages

- 1 -They will directly phagocytes the viruses and bacteria.

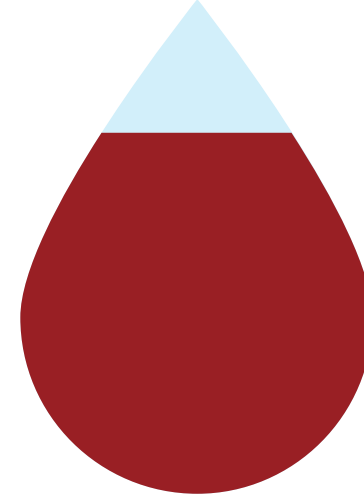
Types of lymphocyte



T cells

a type of white blood cell and they help protect the body from infection and may help fight cancer.

Location : in cortex.



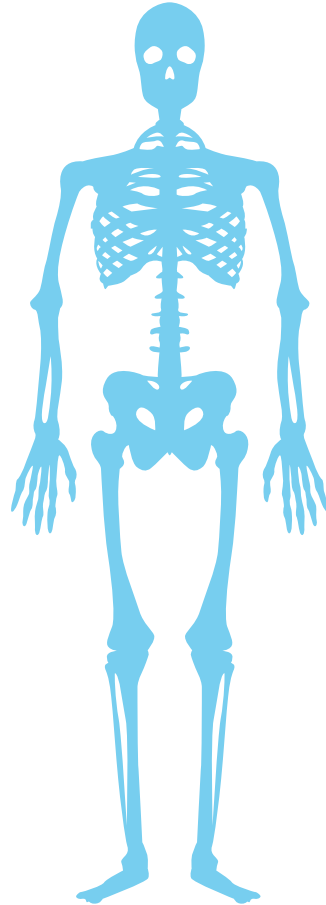
B cells

a type of white blood cell that makes antibodies.

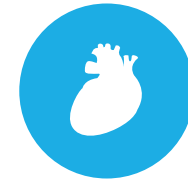
Location: in germinal center.



Function of lymph nodes



Filtration



Immune system activation



Production of lymphocytes

spleen

Spleen: is the largest lymphatic organ.

Located: in the upper left abdominal quadrant.

Contains two tissue types:

- White pulp
- Red pulp

Function of the spleen

- 1-acts as a blood filter and controls the amount of red blood cells and bloods storage in the body.
- 2 -help to fight infection



Tonsils

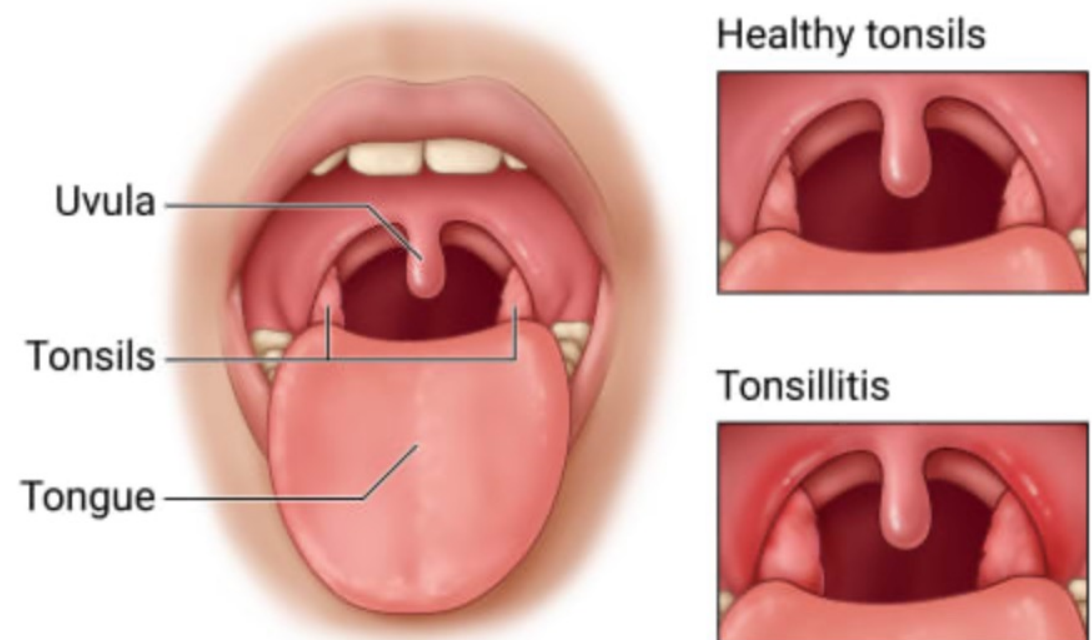
The tonsils are small masses of lymphoid tissue that ring the pharynx (the throat)

The function:

Their job is to trap and remove any bacteria or other foreign pathogens entering the throat.

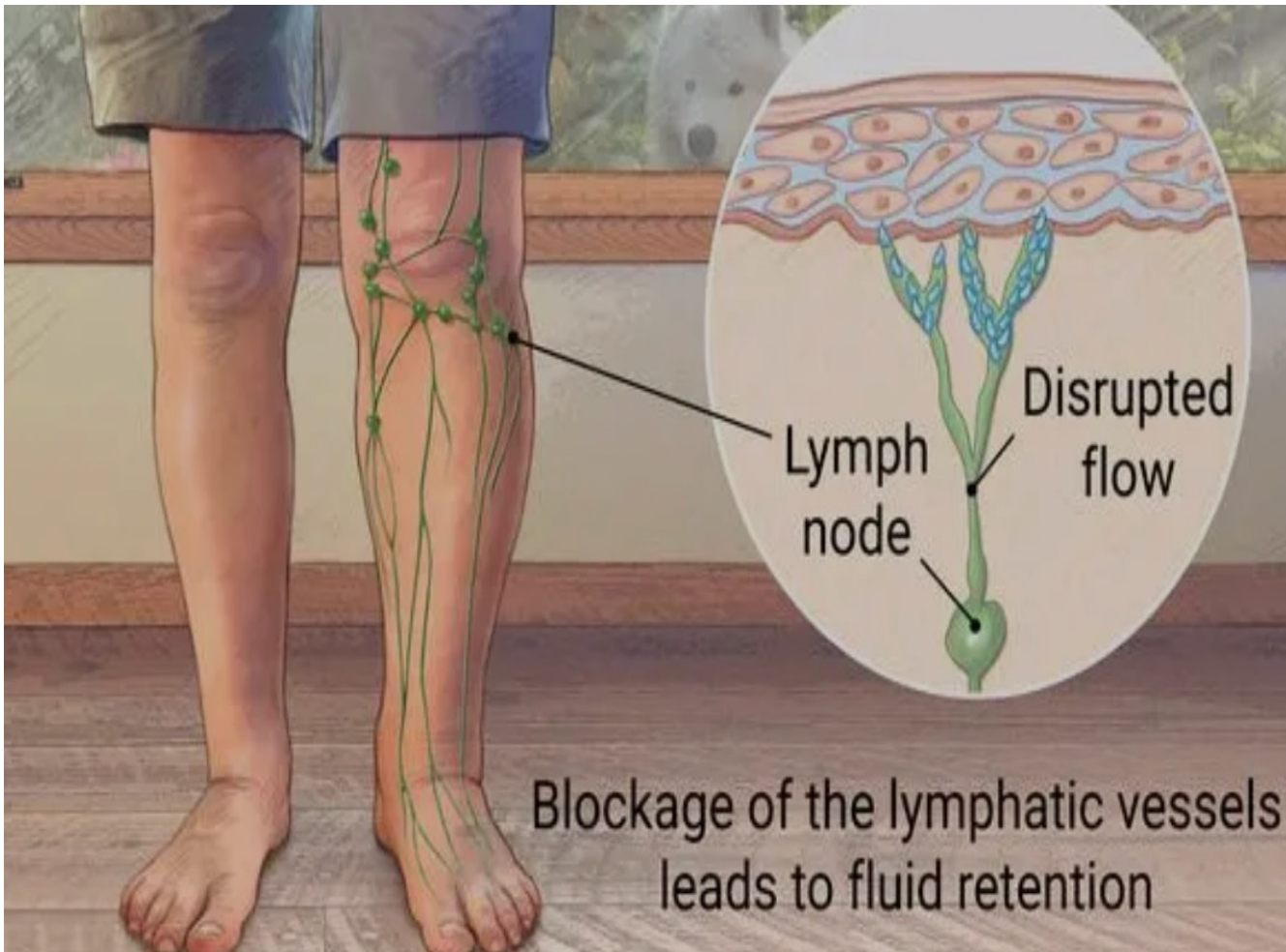
Disorder:

sometimes they become congested with bacteria and become red, swollen, and sore, a condition called tonsillitis



Disease of the lymphatic system

Lymphedema is a build-up of lymph fluid in the fatty tissues just under your skin. This build-up causes swelling (or edema), most often in the arms or legs. Lymphedema can result from surgery or radiation therapy to treat certain cancers.



- THANK YOU -

