

HUMAN ANATOMY AND PHYSIOLOGY-I, BP-101(T)**UNIT-III (Body fluids and blood)****CLASS:9****TOPIC – Lymph circulation and functions of lymphatic circulation**

- Here, the epithelial cell secret the thymic hormone which gives their help in to the maturation of pre t cells but the exact functions are not known.

2) Secondary lymphatic organs:

- The secondary lymphatic organs are:
 - ✓ lymph nodes and
 - ✓ spleen.
- These organs are covered by the capsule layer.
- The lymphatic nodules are not categorized as secondary lymphatic organs, because it is not surrounded by the capsule layer and it is a cluster of lymphocyte which guards the all mucous membrane (gastrointestinal tract, respiratory passage, urinary tract and reproductive tract) against the harmful pathogens.

1. Lymph nodes:

Location: Along the length of lymphatic vessels.

Anatomy:

- It is oval or bean shaped and 1 to 25 mm in length.
- Each node is covered by a capsule of dense connective tissue.
- Same as thymus gland the extended capsular part is known as trabeculae.
- Also consist the cortex and medulla region.
- The outer cortex consists of follicles and its inner part consist packed lymphocytes resemble as lymphatic nodule.
- The outer region of follicle contains t – cells, macrophages and follicular dendrites cells.
- In the centre areas of the follicles contain b-cells which secretes antibody.
- The inner region is known as medulla it consists of macrophages and plasma cells.

Functions of lymph:

1. Fluid and protein balance:
 - When the blood circulates throughout the body, lot of fluid filtered by the capillaries gets trapped in the tissues of the body.
 - This trapped fluid, also called as interstitial fluid, comprises about 10% (1-2 liters) of the total fluid. the loss of this fluid is substantial as it is rich in several vital proteins that are required by the body.
 - The lymphatic system prevents this loss by collecting this fluid in the lymphatic vessels and returns it to the circulatory system.
2. Transportation of nutrients:

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- Lymphatic system works in collaboration with the circulatory system to transport various essential nutrients in the body.
 - It carries lipids and lipid soluble vitamins (a, d, e & k) absorbed by the gastrointestinal tract to the blood.
 - Lymphatic system delivers oxygen, hormones and other essential nutrients through the blood, to the body cells.
3. Digestion:
- Lymphatic system also assists the digestive system in various ways.
 - The lymphatic vessels that are located in the gastrointestinal lining help in the absorption of fats from the food that we eat.
 - Lymphatic system is required for proper assimilation of fats in the body. failure on the part of lymphatic system may result in serious malnutrition.
 - Lymphatic system prevents obesity which results due to accumulation of 'bad' fat in the body.
4. Excretion:
- Lymphatic system removes dead blood cells, excess fluid, waste, debris, etc. from the body, thereby assisting in excretion of waste materials from the body.
 - Lymphatic system also removes pathogens, toxins and cancer cells from the body cells as well as inters cellular spaces.
5. Protection:
- Lymphatic system consists of b-cells and t-cells. These cells provide us protection against the harmful pathogens like bacteria, toxins, virus etc.
 - when pathogens enter in to the cells they get activated and fight against it.
 - First they identify the pathogen and if it is harmful for us then they kill it by cell mediated immunity (t-lymphocyte mediated) or humeral immunity (b lymphocyte mediated) and protect us from harmful diseases.

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IMPORTANT QUESTIONS:

2M QUESTIONS:

1. What is lymph.

5M QUESTIONS:

- 1) Write about composition and functions of blood.
- 2) Write an explanatory note on lymphatic system.

10M QUESTIONS:

- 1) Write about composition and functions of blood.
- 2) Write an explanatory note on lymphatic system.