



كلية الرشيد الجامعة / قسم كلية التمريض

مادة التشريح للمرحلة الاولى

المحاضرة الثالثة

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Human anatomy

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Lymphatic system

It is a drainage system that returns the lymph to the blood stream. Lymph is a clear colorless fluid formed in tissue by blood plasma, proteins, lymphocytes, waste products and pathogens.

Intestine has milky white lymph because of its high fat content and called chyle.

It is an important system for:

- 1- Immunological defense against bacteria and viruses.
- 2- Absorbs and transports fat.
- 3- Produces lymphocytes and antibodies.

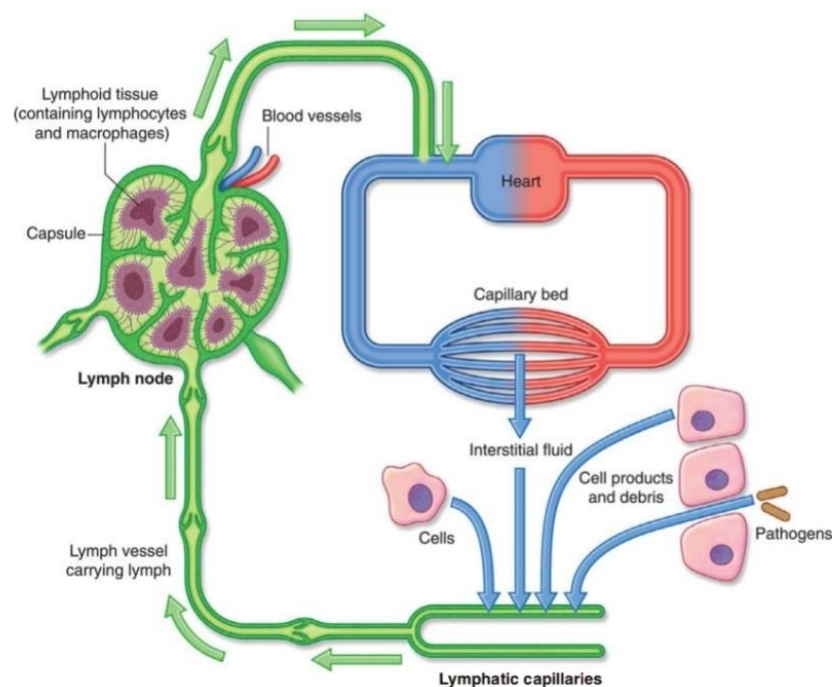


Fig. 1.29 Lymphatic vessels mainly collect fluid lost from vascular capillary beds during nutrient exchange processes and deliver it back to the venous side of the vascular system.

Lymphatic system is composed of:

- (1) Lymph vessels.
- (2) Lymph nodes.
- (3) Lymphoid tissue.

1. Lymph vessels:

They drain a fluid (lymph) from tissue returning it to blood.
They have numerous valves giving it beaded appearance.

Lymph capillaries are a network of fine vessels that drain lymph from tissue; they are wide with thin endothelium.

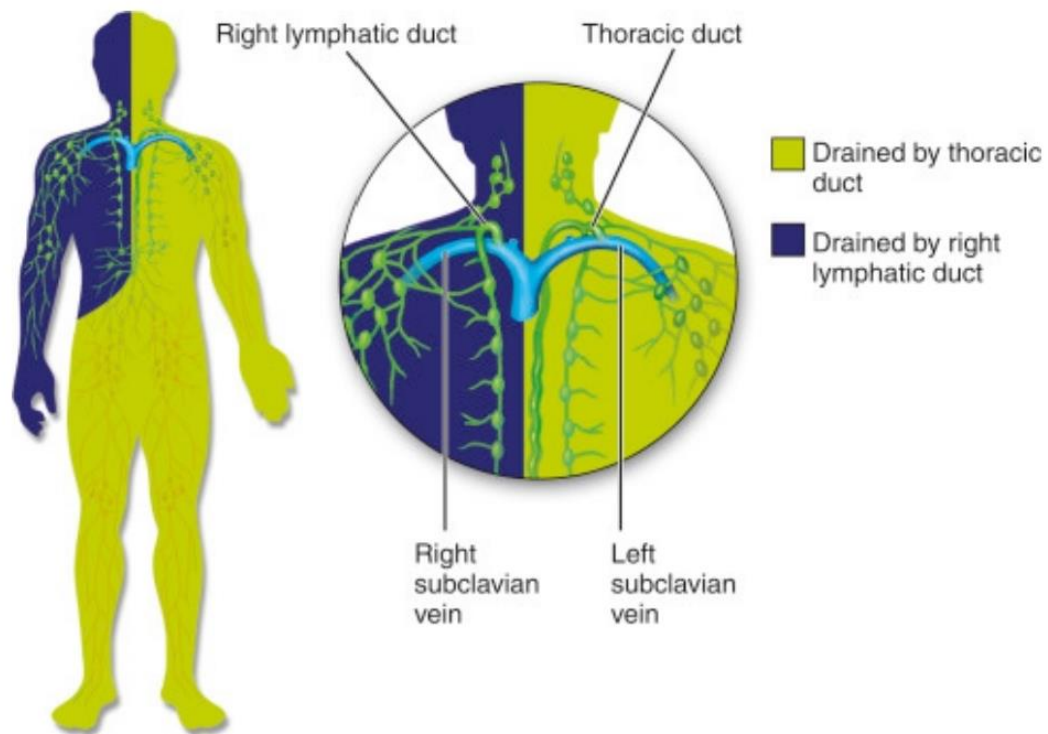
Afferent lymph vessel: is a lymph vessel that carries lymph to lymph node.

Efferent lymph vessel: is a lymph vessel that transports lymph away from lymph node.

Right lymphatic trunk: drains lymph from right upper quadrant of body (right half of head, neck, thorax and upper limb).

Thoracic duct: drains lymph from remainder (rest) of the body.

Both right lymphatic trunk & thoracic duct end into large veins in thorax.

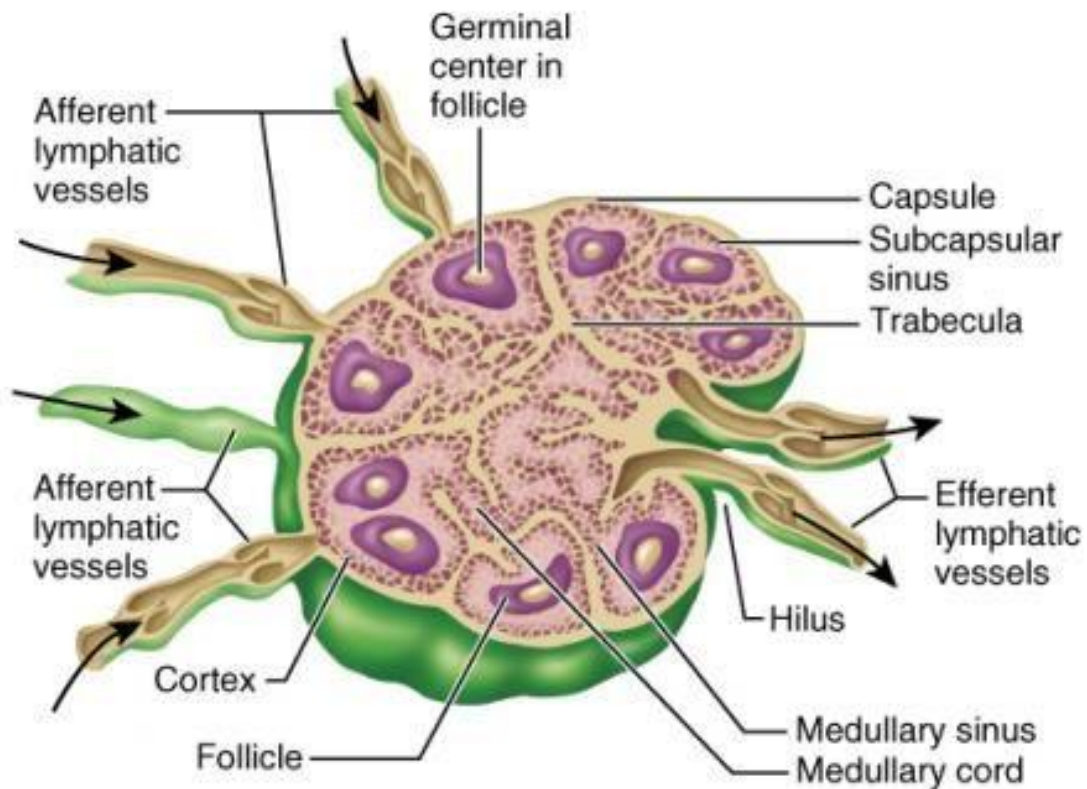


2-lymph nodes

Small masses of lymphatic tissue located along the course of lymphatic vessels. They filter the lymph drained from tissue.

Each node receives afferent lymphatic vessel and gives larger efferent lymphatic vessel.

Lymphatic tissue is a type of connective tissue that contains large amounts of lymphocytes.



(a)

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3- lymphoid tissue (lymphatic aggregation):

Can be found in the following:

- * Thymus.
- * Tonsils.
- * Spleen.
- * Lymphatic nodules and lymph nodes.
- * Lymphatic aggregation in wall of digestive tract (Peyer's patches).
- * Myeloid tissue in red bone marrow.

There are some sites of no lymph drainage;

*brain *spinal cord *cornea of the eye *cartilage *bone marrow *alveoli of the lung *inner ear.

Nervous system

Is the major controlling, regulatory, and communicating system in the body.

It can be divided into;

Anatomically:

*central nervous system

1- Brain, cerebrum, cerebellum and brain stem

2-Spinal cord

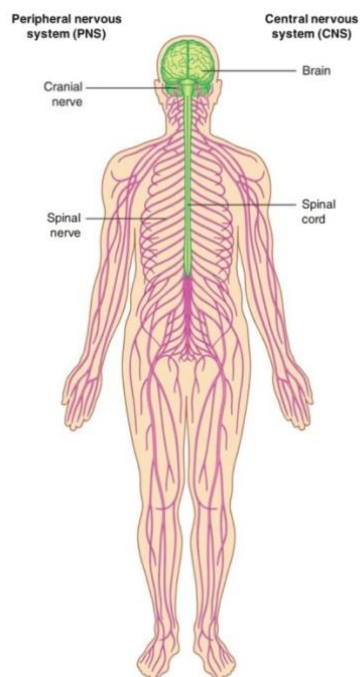


Fig. 133 CNS and PNS.

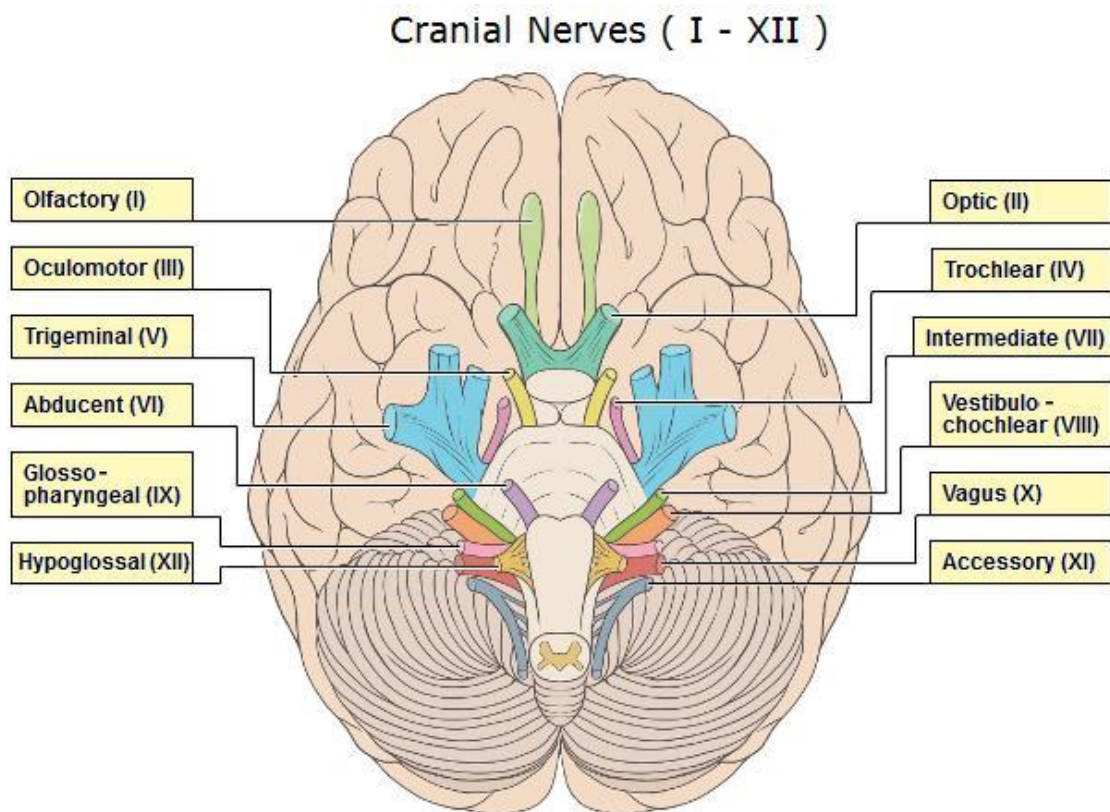
*peripheral nervous system:

1- cranial nerves (12 pairs)

2- spinal nerves (31 pairs)

- 8 cervical
- 12 thoracic
- 5 lumbar
- 5 sacral
- 1 coccygeal

Cranial nerves; leaves the brain and pass through foramina in the skull. All nerves are distributed in the head and neck except the vagus nerve (Xth) which supplies structures in the thorax and abdomen.

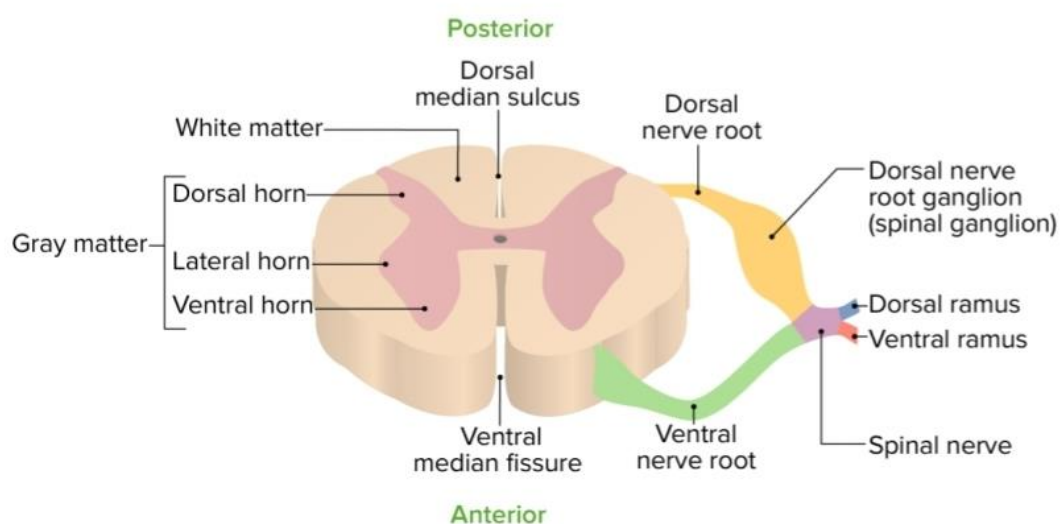


Spinal nerves; generally refers to a mixed spinal nerve, which carries motor, sensory, and autonomic signals between the spinal cord and the body.

Humans have 31 pairs of spinal nerves: 8 cervical spinal nerve pairs (C1-C8), 12 thoracic pairs (T1-T12), 5 lumbar pairs (L1-L5), 5 sacral pairs (S1-S5), and 1 coccygeal pair.

Each spinal nerve is formed by the combination of nerve fibers from the dorsal and ventral roots of the spinal cord. The dorsal roots carry afferent sensory axons, while the ventral roots carry efferent motor axons.

Outside the vertebral column, the nerve divides into branches. The dorsal ramus contains nerves that serve the dorsal portions of the trunk carrying motor, and sensory information to and from the skin and muscles of the back. The ventral ramus contains nerves that serve the remaining ventral parts of the trunk and the upper and lower limbs carrying motor and sensory information to and from the ventrolateral body surface, structures in the body wall, and the limbs.

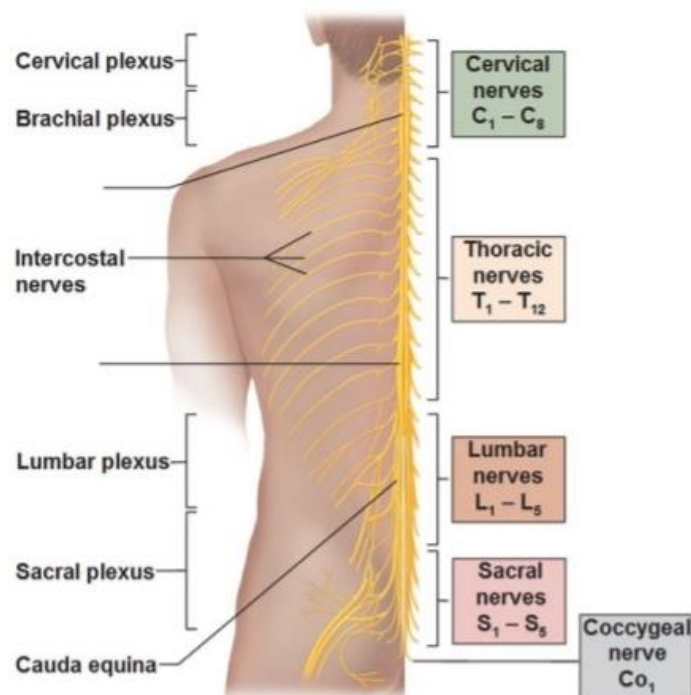


Plexuses:

Some ventral rami merge with adjacent ventral rami to form a nerve plexus, a network of interconnecting nerves. Nerves emerging from a plexus contain fibers from various spinal nerves, which are now carried together to some target location.

Major plexuses include the cervical, brachial, lumbar, and sacral plexuses.

Spinal Nerves Posterior View



Functionally;

*somatic nervous system; controls voluntary activity

*autonomic nervous system; controls involuntary activity

1-sympathetic; innervates structures in the peripheral regions of the body and viscera. (Involuntary response to stressful conditions)

2-parasympathetic; is more restricted to innervations of the viscera only. (rest and digest)

