


<p> ONTÜSTIK QAZAQSTAN MEDISINA AKADEMIASY «Оңтүстік Қазақстан медицина академиясы» АҚ </p>		<p>  SOUTH KAZAKHSTAN MEDICAL ACADEMY АО «Южно-Казахстанская медицинская академия» </p>
Department of «Topographic anatomy and histology»		52-11
Lecture complex "Normal nervous system and sense organs and vision"		Page.1 of 6

LECTURE COMPLEX

Discipline: "Normal nervous system and sense organs and vision"

Discipline code: NNSSOV 2206


EP name and code: 6B10115 – “Medicine”

Volume of training hours/credits: 30/1

Course and semester of study: 2/3

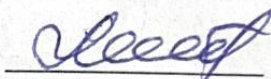
Length of lectures: 2 hours.


Shymkent, 2024

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The lecture complex was developed in accordance with the working curriculum of the discipline (syllabus) "Normal nervous system and sense organs and vision" and discussed at the meeting of the department of «Topographic anatomy and histology»

Protocol No. 1 from "03" 09 2024

Head of the department, c.m.s., acting professor  Murzanova D.A.

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Lecture No. 1.

1. Topic: Histology of the nervous system.

2. Purpose: Give an idea of the structure, development and functional significance of the peripheral nerve ganglia and nerve trunks and spinal cord.

- Provide an understanding of the structure, development and functional significance of the brain stem and cerebellum.

3. Lecture abstracts. The nervous system is divided into central and peripheral, and is functionally divided into somatic and vegetative. The somatic nervous system innervates the whole body, the vegetative nervous system innervates the internal organs. The source of the development of the nervous system is the neural tube and the neural crest.

Sensitive nerve nodes are located along the course of the posterior roots of the spinal cord. The ganglia include sensitive pseudounipolar erythrocytes. The dendrites of pseudounipolar neurocytes in the spinal nerves go to the periphery and end with receptors, and the axons in the posterior roots are directed to the spinal cord.

Vegetative ganglia are divided into sympathetic (prevertebral and paravertebral) and parasympathetic (intramural), they include multipolar efferent, afferent and associative neurocytes.

Nerve trunks consist of myelin and myelin-free nerve fibers, which are divided into bundles of the first, second, and third orders by layers of loose connective tissue. The nerve is surrounded by an epineurium from the outside.

The spinal cord consists of gray and white matter. Gray matter is represented by multipolar erythrocytes, myelin-free and myelin-free nerve fibers and neuroglia. The neurocytes of the spinal cord are arranged in groups, forming nuclei. The white matter consists of myelin nerve fibers and neuroglia. Nerve fibers form pathways.

The central nervous system includes the brain and spinal cord. The brain consists of a terminal brain and a trunk. The brain stem includes the medulla oblongata, the bridge, the middle, the intermediate brain and the basal part of the terminal brain. The trunk contains white and gray matter. Gray matter is concentrated in the nuclei formed by associative motor or sensitive multipolar neurons. The white matter consists of bundles of nerve fibers forming ascending and descending pathways.

The cerebellum consists of gray and white matter. Gray matter forms the cortex and nuclei of the cerebellum. In the cerebellar cortex, nerve cells are arranged in layers, forming molecular, ganglion and granular layers. The white matter is formed by afferent and efferent nerve fibers. Afferent fibers are represented by mossy, lianoid and adrenergic. Efferent fibers are formed by axons of pear-shaped cells, which are directed to the nuclei of the cerebellum and to the vestibular nuclei.


Cerebellar glia are represented by astrocytes, oligodendrocytes, microglia and Bergman cells.

4. Illustrative material

- color micrographs of histopreparations
- * electronograms, diagrams, drawings

5. Literature:

Main literature

<p style="text-align: center;"> ONTÜSTIK QAZAQSTAN MEDISINA AKADEMIASY «Оңтүстік Қазақстан медицина академиясы» АҚ </p>		<p style="text-align: center;">  SOUTH KAZAKHSTAN MEDICAL ACADEMY АО «Южно-Казахстанская медицинская академия» </p>
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1. Inderbir Singh. Textbook of Human Histology. With Color Atlas and Practical Guide/8th Edition. Jaypee Brothers Medical Publishers .2016.-302 p. Перевод Гистология человека
2. Dudek Ronald W. Embryology / Ronald W. Dudek. - 5th ed. - [s. l.] : Wolters Kluwer, 2014. - 158 p. Перевод заглавия: Эмбриология
3. Gartner Leslie P. Cell Biology and Histology / Leslie P. Gartner. - 8th ed. - [s. l.] : Wolters Kluwer, 2019. - 436 p. - (BRS. Board Review Series) Перевод заглавия: Клеточная биология и гистология

Additional literature

Textbook of Human Histology. Inderbir Singh /Sixth Edition/ Inderbir Singh 2010.-386 p.
Перевод Учебник по гистологии человека

Electronic publications

1. ATLAS OF HISTOLOGY with Functional Correlations. Thirteenth Edition, Wolters Kluwer. 2017.- 1102 p.
2. Theory and practice of Histological techniques. Eighth edition. Elsevier Limited. 2019.-554 p.
3. Textbook of Human Histology. With Color Atlas and Practical Guide/8th Edition. Jaypee Brothers Medical Publishers .2011.-386 p.
4. USMLE Step 1. Lecture Notes 2018. by Kaplan. 2018.-425 p/
5. Zhumabayeva, S.E., Boken, T.S. Cytology and histology : Educational-methodical complex. . - Kokshetau: KGU, 2017. - 101 p. <http://rmebrk.kz/>
6. Бородулина, О.В. Цитология и гистология – Cytology and histology : Практикум. / Костанайский гос. педагогический университет им. У. Султангазина. - Костанай: КГПУ им. У. Султангазина, 2020. - 100 с. - <http://rmebrk.kz/>

6. Control questions (feed back):


- Morphofunctional characteristics of the nervous system.
- Sources and course of development.
- Sensitive nerve nodes.
- Vegetative ganglia.
- Nerve trunks.
- Spinal cord
- Morphofunctional characteristics of the central nervous system.
- Sources and course of development.
- The brain stem.
- Cerebellar cortex. The cerebral cortex.

Lecture No. 2.

1. Topic: Histology of the sensory organs.

2. Purpose:

* Inform about the structure, development and functional significance of the receptor cells of the visual and olfactory organs and the mechanisms of reception.

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* Inform about the structure, development and functional significance of the receptor cells of the organs of hearing, balance and taste and the mechanisms of reception.

3. Lecture abstracts.

General characteristics of the senses from the point of view of the doctrine of analyzer (sensory systems) systems. Receptor cells and receptor mechanisms. Classification of sensory organs depending on the development and structure of receptor cells.

The organ of vision. General morpho-functional characteristics. The course of embryonic development and the sources of development. The general plan for the construction of the eyeball. The apparatus of the main function: diopter (light-emitting), accommodation and receptor. Photoreceptor cells. Neuronal composition and retinal gliocytes. The pigment layer. Yellow spot and central fossa. The disc of the optic nerve.

The olfactory organ. General morpho-functional characteristics. The course of embryonic development and the sources of development. The organs of smell. Supporting and basal cells.

Organs of hearing and balance. General morpho-functional characteristics. The inner ear. Sources of embryonic development and the course of development. Vestibular apparatus of the membrane labyrinth: uterine, saccular and semicircular nuclei, their receptor divisions: specks and ampullary ribs. Ciliary (sensory epithelial) and support cells. Otolith crack and dome. Innervation is the cochlear part of the membrane labyrinth. A spiral organism. The organ of taste. General morphofunctional characteristics and the course of embryonic development. Taste sensations. Taste cells.

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3. Gartner Leslie P. Cell Biology and Histology / Leslie P. Gartner. - 8th ed. - [s. l.] :Wolters Kluwer, 2019. - 436 p. - (BRS. Board Review Series)Переводзаглавия: Клеточнаябиологияигистология

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6.Control questions (feed back):

- * Understanding analyzers
- * Eyeball and olfactory organs;
- * Cornea of the eyeball
- * Basic functional devices
- * Olfactory cells. Supporting and basal cells.
- * * Morphofunctional characteristics of the organs of hearing, balance and taste.
- * Vestibular part of the membrane labyrinth •spiral organ
- * Taste buds.
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