

Department of Human Anatomy

GUIDELINES

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|---------------------|---|
| Academic discipline | Human Anatomy   |
| Module №            | 2   |
| Content module №    | 11  |
| Study subject       | The olfactory brain. Basal nuclei. The lateral ventricles. White substance of cerebral hemispheres. |
| course              | 1   |
| Faculties           | Medical   |
| Hours               | 3   |

2017

### **1. The specific objectives are:**

- Know and demonstrate compounds of the endbrain on brain preparations, determine the general characteristics of their development and function.
  - Know the structure of the olfactory brain and show the structures, belonging to its department;
  - analyze the topography and the structure of the main (basal) nuclei, demonstrate them on the preparations;
  - demonstrate parts of the ventricles, their walls and posts on the brain preparations;
- Define the term "limbic system", define the boundaries Colorectal share her gyr and sulcus;
- Identify the components of the seahorse, lots of Ammon horns and its layers;
- Describe and demonstrate on brain preparations the way of associative, commissural and projective nerve fibers of the white matter.
- Know the location and show on the preparations parts of corpus callosum, the roof and the front spike of the cerebrum
- Demonstrate internal, external and extreme capsules on the preparations;
- Draw a diagram of the internal capsule fibers

### **2. Basic level of preparation.**

#### **● Names of previous disciplines:**

Biology.

Latin: basic Latin terminology;

Human anatomy:

Functions of nervous system;

classification of the cerebrum parts

development of the human cerebrum;

#### **Recieved skills are:**

- Regularity of filo and brain ontogenesis
- Identifying and demonstration of cerebrum sections
- Know the classification of neurons in structure and function;
- Know the structure and function of formations of white and gray matters of spinal cord, brainstem and diencephalon.

### **3. The content of the material.**

- repeat the parts and departments of cerebrum before the study of the topic.
- Then you have to consider derivatives of endbrain

Endbrain

It is the brain department, which includes the cerebral hemispheres. It is distinguished cloak olfactory brain and the main cores in each hemisphere. Hemispheres are interconnected with each other by the corpus callosum, fornix and the anterior commissure. Hollows of forebrain are lateral ventricles.

- Then the internal structure of the cerebral hemispheres is examined (the gray and the white substance).

The gray matter of the hemispheres:

cerebral cortex

The main nuclei:

- Striatum (caudate and lenticular nuclei)
- cláustrum
- The amygdala (one of the components of the limbic system)
- We consider the concept of old and new striatum.

Caudate core and scales lenticular nucleus of origin is new creations than the globus pallidus, so united in concept neostriatum. Pallidus lenticular nucleus and older It refers to paleostriatum. It should be noted that the striatal nucleus body - the higher centers of the extrapyramidal system. The defeat of the cores striatum leads to various movement disorders.

- Demonstrates capsule separating the basal ganglia (Internal, exterior, very). Pay attention to the fact that the capsules formed white matter.

- Next, the structure of the white matter of the hemispheres great brain. It emphasized the presence of three types of fibers:

The white matter of the hemispheres:

- associative fibers

- Commissural fiber:

- callosum

- anterior commissure of the brain

- fornicommissure

- Projection fibers

- It also examines the structure and connection of commissural fibers as the corpus callosum, anterior Spike, vaults.

- Then discusses the lateral ventricles - parts, walls, message.

Lateral ventricles:

anterior (frontal) horn;

posterior (occipital) horn;

lower (temporal) horn;

central part.

- It then examines how the olfactory brain phylogenetically the oldest part of as part of the hemispheres.

### **Olfactory brain:**

- Front olfactory lobe (the olfactory bulb, olfactory pathway, the olfactory triangle, front permeated substance olfactory strip of land transparent septum)

- Rear olfactory lobe (colon share podmozolistoe field, the amygdala).

- seahorse (hippocampus, dentate gyrus, the base seahorse)

- ❖ Pay attention to the fact that the olfactory brain is morphological basis of the limbic system.

- ❖ limbic system

- ❖ The components of the olfactory brain transparent partition, papillary body, the arch, the thalamus and the hypothalamus. It should be noted that the complex structure is related to regulation of internal organs. Irritation cores limbic system not only causes changes circulatory, respiratory, sexuality, and the phenomenon emotional about (changes in mood and joy pleasure in the feeling of fear and anxiety. In addition, the seahorse is the portion that is associated with long-term memory. The pulses coming from the nuclei in the limbic system of the neocortex, give emotional coloring of any relevant reaction, which is directed to the external environment

### **The training material is studied with the use of:**

- Anatomical specimens: individual anatomical specimens whole brain sagittal brain section, cerebral hemispheres without cerebellum with remote soft mater, the horizontal sections of the brain through basal nucleus and at the lateral ventricles.
- Dummy, tables, figures on employment.

### **The content of the educational material.**

- The end (large) brain: parts, describe and demonstrate to preparations.
- The cerebral hemispheres: parts, describe and demonstrate on formulations.
- Corpus callosum, its topography, parts, functional meaning; describe and demonstrate on the preparations.
- Body: its topography, parts, functional meaning; describe and to demonstrate formulations.
- Olfactory brain: parts, their components, functional value; describe and demonstrate on the preparations.
- Basal nuclei: topography, parts, functional meaning; describe and demonstrate on the preparations.
- Striatum: topography, parts, functional meaning; describe and demonstrate on the preparations.
- The limbic system: components, functional meaning.
- Lateral ventricles: development, parts, topography, walls, communication; describe and demonstrate on the preparations.
- Anterior horn of the lateral ventricle topography, walls, posts; describe and demonstrate on the preparations.
- Posterior horn of the lateral ventricle topography, walls, posts; describe and demonstrate on the preparations.
- The lower the angle of the lateral ventricle topography, walls, posts; describe and demonstrate on the preparations.
- The central part of the lateral ventricle topography, walls, communication; describe and demonstrate on the preparations.

## **5. Technique of the organization of educational process at the practical lesson.**

### **Preparatory stage.**

5.1.1. Formation of motivation for targeted training activity in the study of brain anatomy with the final aim professional activities of doctor: study of the final anatomy of the brain are the basis interpretation of the normal and pathological function, Search expands commitment treatments at pathological processes; perfect knowledge of the internal structure of the brain expanding choice of professional activities neurosurgery, psychiatry and neuropathology.

5.1.2. Familiarization of students with specific goals and plan classes based on the "Guidelines for Teachers' according to claim 1 - specific goals; of claim 3 – content educational material.

5.1.3. Implementation of standardized control entry the level of training students:

5.1.3.1. - The tests for academic topic;

5.1.3.2. - For control of initial level of knowledge.

5.2. The main stage. Held training on anatomical preparations, models and Figures on the structure of the content of the educational material, solved situational problem. Embodies the individual techniques teacher to facilitate the study of complex anatomic components. Students independently study the internal structure of the final brain with active consultation of the teacher. Knowledge of students checked by control questions and tasks for the content of the theme.

5.3. The final stage.

- Assessment of the current activity and the activity of each student during the occupation;
- Held a standardized control finite knowledge students;
- Declare student assessment activities and exhibits register of visits and student achievement;
- Elder group enters the entry sheet in the assessment of progress and attendance of classes by students, the teacher assures them of its signature;
- The teacher informs the students with the contents of the theme next session, recommended methodological his tricks training.

## **6. Applications. Control means:**

- Tests
  - Situational tasks
  - Control questions and tasks on the content of the theme classes
  - Checklist entry-level preparation of students
  - Checklist of the final level of training
  - The list of practical skills Situational tasks.
1. The patient was bleeding in the brain in the area of the hook okologipokampalnoy gyrus. What are the functional disturbances be patient?
    - (Violation of smell)
  2. It is known that Parkinson's disease is associated with impaired striatal system. What kind of education are striatum?
    - (The caudate nucleus and the cortex)
  3. After suffering encephalitis patient is observed accumulation of cerebrospinal fluid in the right lateral ventricle. What could be the reason?
    - Imperforate right interventricular holes)
  4. The patient shake hands and head. instituted palidarnaya system. What kind of education are pallidum?
    - (The globus pallidus)
  5. In a patient diagnosed with a tumor in the upper surface thalamus. In what part of the lateral ventricle to be opened outflow cerebrospinal fluid, if the tumor is actively growing?
    - (The central part)
  6. MR aggregation gray matter was found located between the inner and outer capsules. What basic (basal) kernel was found?
    - (Lenticular nucleus).
  7. MRI was discovered cluster of gray matter located between the external and extreme capsules. What is the main (basal) kernel was found?
    - (Guard).
  8. In case of violation of cerebrospinal fluid leak was appointed MRI studies, where the upper wall of the lower horns lateral ventricle accumulation of gray matter was found. What is the main (basal) kernel was found?

(- The tail of the caudate nucleus).

9. The patient has frequent changes of mood from joy and pleasure in the feeling of fear, anxiety and fear.? Emotional experiences are accompanied by disturbances in the cardiovascular, respiratory, digestive and other visceral systems organism. Irritation cores or leads to such systems functional changes?

(- The limbic system).

10. Brain hemorrhage caused loss and exteroceptive proprioceptive sensitivity as well as blurred vision and patient hearing. Damage to any part of the internal capsule It leads to violations of the above? (- Rear leg).

### **Control questions to check the entry-level training students.**

1. With the brain develops a germ layer?
2. What relates to the central nervous system?
3. Nazvat parts of the brain.
4. From which parts of the brain is big?
5. What is the end-brain cavity?
6. Name the part of the lateral ventricles.
7. In what proportion of the hemisphere is a central part of the side ventricle?
8. In what proportion of the hemisphere is the lateral anterior horn ventricle?
9. The posterior horn is located in a side-lobe hemisphere ventricle?
10. The bottom corner is located in any part of the hemisphere side ventricle?
11. List the main (basal) end-brain nuclei.
12. What are the core is the striatum?
13. What capsule separated the basal ganglia?
14. Name the parts of the olfactory brain.
15. What applies to the front of olfactory cortex?
16. What applies to the back of the brain olfactory?

### **Control questions and tasks on the content of the theme sessions.**

1. Identify the components of the final cord.
2. What is the hemispheric asymmetry of the brain?
3. Define the structure of the corpus callosum and demonstrate to preparations part.
4. Demonstrate to the preparation of the roof and determine their communication.
5. Demonstrate preparation transparent partition.
6. Describe the structure of the anterior commissure of the brain, showing the course of its fibers.
7. Is transparent partition between what education? What is the function of?
8. What is the gray matter of the cerebral hemispheres?
9. What kind of education are among the main (basal) nuclei? Demonstrate them in preparation.
10. What are the core is the striatum?
11. What the components of the caudate nucleus? Demonstrate their on the specimen.
12. What the components of lenticular nucleus?

Demonstrate them in preparation.

13. What distinguishes the fibers in the white matter of the telencephalon?
14. What are the associative fibers? What are they connected?
15. What is the commissural fiber? What are they connected?
16. What is meant by the projection fibers? What are they connected?
17. Which formations are commissural fibers?
18. What is the internal capsule?
19. Identify and show on the preparation of the internal capsule.
20. Between which is located outside the main core capsule? Show on the drug.
21. Where is the external capsule? Demonstrate preparation.
21. What is the end-brain cavity?
22. What part of the lateral ventricles have?
23. Describe and demonstrate on the preparation of the front wall the horns of the lateral ventricles.
24. Describe and demonstrate on the preparation of the posterior horn of the wall lateral ventricles.
25. Describe and demonstrate on the preparation of the lower horn wall lateral ventricles.
26. Describe and demonstrate on the preparation of the central wall parts of the lateral ventricles.
27. Demonstrate preparation interventricular foramen. That it connects the ventricles?
28. Identify and show on the preparations of the olfactory cortex.
30. Identify and sell

**Control questions and tasks to check the final level preparation of students.**

- Identify and show on the final formulation components brain.
- What refers to the gray matter of the cerebral hemispheres?
- Identify and show on the main core preparation hemispheres of the brain.
- What are the core is the striatum? Demonstrate their on the specimen.
- What the components of the caudate nucleus? Demonstrate to their preparation.
- What the components of lenticular nucleus?

Demonstrate them in preparation.

- Demonstrate preparation components striatum; to determine their functions and function relationships and communication with other centers extrapyramidal system.
- Demonstrate preparation components paleostriatum; to determine their functions and function relationships and communication with other centers extrapyramidal system.
- Demonstrate preparation fencing and its related structure; define functions fence.
- Demonstrate preparation amygdala; determine its nucleus and functions.
- What is the cavity of the cerebral hemispheres?
- The lateral ventricles are filled?
- What parts comprise lateral ventricles?

Demonstrate on the drug.

- In what proportion of the cerebral hemispheres is located anterior horn of the lateral ventricle? Show on the drug.
- How many of the walls has a front horn of the lateral ventricle?
- The front panel shows the anterior horn of the lateral ventricle?
- The top wall provided the anterior horn of the lateral ventricle?
- The medial wall is represented by the anterior horn of the lateral ventricle?
- What is a side wall of the anterior horn of the lateral ventricle?

- The bottom wall represented the anterior horn of the lateral ventricle?
- In what proportion of the cerebral hemispheres is located the central part of the lateral ventricle? Show on the drug.
- What is the central part of the wall of the lateral ventricle?
- The upper wall represented the central part of the side ventricle?
- The bottom wall represented the central part of the side ventricle?
- The presented medial wall of the central part lateral ventricle?
- In what proportion of the cerebral hemispheres is back horn of the lateral ventricle? Show on the drug.
- How many of the walls has a posterior horn of the lateral ventricle?
- The top wall provided the posterior horn of the lateral ventricle?
- What is a side wall of the posterior horn of the lateral ventricle?
- The bottom wall represented the posterior horn of the lateral ventricle?
- The presented posterior horn of the medial wall of the lateral ventricle?
- Identify and show on the protrusion of the drug located on the wall at the middle of the posterior horn.
- Identify and show on preparation improving located on the bottom wall of the dorsal horn.
- In what proportion of the cerebral hemispheres is lower the angle of the lateral ventricle? Show on the drug.
- What is the bottom corner wall of the lateral ventricle?
- The represented top wall of the lower horn of the lateral ventricle?
- What is a side wall of the lower horn of the lateral ventricle?
- The lower panel shows the underside of the lateral horn ventricle?
- The lower panel shows the medial lateral horns ventricle?
- Describe the structure of the seahorse. Show on the drug.
- How are combined with each other lateral ventricles?
- What does the lateral ventricles?
- What refers to the white matter of the cerebral hemispheres?
- Call the associative fibers of the white matter of the final brain. What are they connected?
- In what formations are white commissural fiber telencephalon substance. What are they connected? Name and show on preparation.
- Identify and show on the preparation of the corpus callosum.
- Identify and show on the preparation of the vault.
- Interconnected fiber vaults?
- Between which entities located inside capsule?
- Demonstrate preparation to the internal components capsules.
- What are the fiber content consists of the front leg of the inner Capsules?
- What are the fiber content consists of the internal capsule knee?
- What are the fiber content consists of the rear leg of the internal capsule?
- Between which entities located outside capsule? Demonstrate on the drug.
- Between that education is extremely capsule? Demonstrate on the drug.
- What are the parts of the olfactory brain is?
- Demonstrate preparation components front the share of olfactory brain.
- Identify and show on the furrows and convolutions preparation obidkvoi share.
- Demonstrate preparation components back of the olfactory cortex.
- What structures belong to the limbic system? Show on formulations.
- To determine the functional significance of the limbic system

## **A standardized list of practical skills:**

- Striatum
- The caudate nucleus
  - head
  - body
  - tail
- Lenticular nucleus
  - peel
  - Side pallidus
  - Medial globus pallidus
- Fencing
- The central part of the lateral ventricle
- The walls of the central part
- Anterior (frontal) horn of the lateral ventricle
- The walls of the anterior horn
- Posterior (occipital) horn of the lateral ventricle
- The walls of the posterior horn
- Bird prison lateral ventricle
- Roundabout increase the lateral ventricle
- Lower (temporal) horn of the lateral ventricle
- Lower corner walls
- Sea Horse
- Interventricular foramen
- The outer end of the brain capsule
- Internal telencephalon capsule
- The front leg of the internal capsule
- The knee of the internal capsule
- The rear leg of the internal capsule