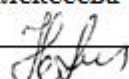


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GUIDELINES FOR STUDENTS ON THE TOPIC OF THE PRACTICAL LESSON:

" Hindbrain: Pons, cerebellum. External and internal structure, functions. Medulla oblongata: external and internal structure, functions. IV ventricle. Rhomboid fossa. Rhomboid isthmus "

Specialty general medicine

Course I

Theme of the lesson: "Rear brain: Pons, cerebellum. External and internal structure, functions. Medulla oblongata: external and internal structure, functions. IV ventricle. Rhomboid fossa. Isthmus of the Rhomboid brain. "

The purpose of the lesson:

- to study the external and internal structure of various departments of the rhomboid brain;
- learn to explain using Latin terminology and demonstrate on natural preparations the details of the structure and topography of the gray and white matter of the Pons, cerebellum, medulla oblongata, rhomboid fossa;
- Motivation of the topic of the lesson: the formation of knowledge about the structure and functioning of the central nervous system as a whole and its departments is necessary for studying the following sections of anatomy, histology, normal physiology, topographic anatomy, pharmacology, pathological anatomy, pathological physiology, and is the basis for studying clinical disciplines: neurology, psychiatry and neurosurgery.

Competencies: OPK-1, 9.

Test questions on the topic of the lesson (App 1)

Lesson plan

1. Testing the assimilation of knowledge obtained in the previous lesson: test control, oral questioning, testing of practical skills.
2. Conversation on the topic of the lesson.
3. Performing assignments.
 - 3.1. Independent classroom work of students.

When studying the Pons at the beginning, examine its external structure, highlighting the ventral and dorsal surfaces of the Pons. Then, select the exit sites of the trigeminal, facial and vestibulo-cochlear nerves as the border with the middle cerebellar pedicle. On the border with the medulla oblongata, find the roots of the abducent nerves, at the top - the legs of the brain, on the ventral surface, the main furrow and the transverse striation of the Pons should be noted. When considering the internal structure of the Pons, a preparation of its transverse section is used, and a scheme is proposed on which the trapezoidal body that separates the Pons into the dorsal (cap) and ventral (basilar) parts is determined. The localization of the nuclei of V – VIII pairs of cranial nerves in the tire of the Pons is noted. It is necessary to pay attention to the fact that the auditory tract fibers are located in the trapezoidal body. Brain strips located on the surface of the tire of the Pons also contain fibers of the auditory tract (from the dorsal nucleus). These fibers, combining, form a lateral (auditory) loop, which passes in the lid of the Pons laterally and above the medial loop.

It should be noted that the transverse striation on the ventral surface of the Pons is due to the Pons-cerebellar bundles of nerve fibers passing here and passing through the middle legs of the cerebellum (from the Pons's own nuclei located at the base of the Pons to the cerebellar cortex). In addition to the transverse fibers, at the base of the Pons, it is worth noting the longitudinal fibers that make up the pyramidal paths (cortical-spinal and cortical-nuclear fibers), as well as the cortical-Pons - extrapyramidal paths going from the cerebral cortex to the Pons's own nuclei. On anatomical preparations, according to tables, anatomical atlas and a textbook, consider the structure of the cerebellum. To study its topography is the posterior cranial fossa. Note that the horizontal gap is the boundary between its upper and lower surfaces. Hemispheres, worms, scraps, nodules, upper, middle, and lower legs of the cerebellum are examined.

The internal structure of the cerebellum is studied on its sections. The localization of the cerebellar nuclei (the nucleus of the tent, spherical, cork-like, dentate), their functional significance is determined. It should be noted that gray matter covers the cerebellum from the outside, forming its cortex. The teacher tells the structure of the cerebellar cortex, indicating its functional significance. It is necessary to study the connections of the cerebellum with other parts of the brain, which are carried out along the nerve fibers in the upper, middle, and lower legs of the cerebellum.

On anatomical preparations, according to tables, anatomical atlas and a textbook, study the structure of the medulla oblongata. First, consider the boundaries separating the medulla oblongata from the Pons; dorsally - these are the brain strips of the V ventricle, ventrally - the lower edge of the Pons. The lower border is indicated - the spinal cord (at the exit of the first pair of spinal nerves at the level of the large occipital foramen).

When considering the surface of the medulla oblongata, it should be noted that the anterior surface of the spinal cord continues into the anterior (ventral) surface of the medulla oblongata, and the posterior surface of the spinal cord continues into the posterior (dorsal) surface of the medulla oblongata. Fissures of the medulla oblongata are a continuation of the grooves of the spinal cord and bear the same names. Pyramids are located laterally from the ventral median sulcus, and olives are lateral to the anterior lateral sulcus. On the posterior surface laterally from the posterior median sulcus, a thin and - laterally from the posterior intermediate sulcus - wedge-shaped bundles ending in the tubercles of the thin and wedge-shaped bundles are defined above. Then the base, tire and roof of the medulla oblongata are determined.

The internal structure of the medulla oblongata is examined at cross sections at the level of the olives and at the level of the intersection of the pyramids, as well as at diagrams of the cross section of the medulla oblongata of other levels. We study the scheme of proprioceptive pathways of the cortical direction to the level of the medulla oblongata, where the medial loop is formed by processes of the second neurons located in the thin and sphenoid nuclei. The cross of medial loops formed by internal arcuate fibers is schematically depicted, the presence of external arcuate fibers (connection with the cerebellum through its lower legs) is noted.

To study the location of the nuclei of IX – XII pairs of cranial nerves on the posterior surface of the medulla oblongata. It is necessary to repeat the topography of the exit of roots of IX, X, XI pairs of cranial nerves (from the posterolateral anterolateral furrow) and XII pairs of cranial nerves (from the anterolateral furrow).

On the preparation of the stem part and sagittal section of the brain, the walls and messages of the IV ventricle are examined (the upper and lower brain sail should be distinguished). It is necessary to emphasize the importance of the median and lateral apertures communicating the cavity of the fourth ventricle with the subarachnoid space.

On the preparation of the brain stem and on the diagram, the relief of the rhomboid fossa is studied: the median groove, medial elevation, facial tubercle, brain strips (the border between the Pons and the medulla oblongata), the upper and lower fossae, the bluish spot, the vestibular field, the triangles of the vagus and sublingual nerves. The relief of the rhomboid fossa after its consideration on the drug should be independently presented in the form of a diagram.

It is recommended that the topography of the cranial nerve nuclei projected onto the rhomboid fossa and located in the midbrain cover be presented in the form of a drawing diagram and a table where it is recommended to indicate: the name of the pair of cranial nerves, the name of each nucleus, its location and innervated areas.

On preparations of the base of the brain and the base of the skull, the exits of 12 pairs of cranial nerves from the brain and from the skull should be repeated.

The list of anatomical formations that a student should be able to find and demonstrate on natural preparations

Medulla	Medulla oblongata (bulbus, myelencephalon)
Front median fissure	Fissura mediana anterior
Medulla pyramid	Pyramis medullae oblongatae
Pyramid Cross	Decussatio pyramidum
Side cord	Funiculus lateralis
Olive	Oliva
Olive kernel	Nucleus olivaris
Lower cerebellar leg	Pedunculus cerebellaris inferior
Wedge-shaped beam	Fasciculus cuneatus
Sphenoid nucleus tubercle	Tuberculum cuneatum
Wedge-shaped core	Nucleus cuneatus
Thin beam	Fasciculus gracilis
Thin nucleus tubercle	Tuberculum gracile
Thin core	Nucleus gracilis
Posterior median sulcus	Sulcus medianus posterior
Fourth ventricle	Ventriculus quartus
Rhomboid fossa	Fossa rhomboidea
Middle groove	Sulcus medianus
Medial elevation	Eminentia medialis
Facial tubercle	Colliculus facialis
Vestibular field	Area vestibularis
Brain strips	Striae medullares
The hyoid nerve triangle	Trigonum nervi trigemini
Fourth ventricular roof	Tegmen ventriculi quarti
Upper Brain Sail	Velum medullare superius
Lower brain sail	Velum medullare inferius
Middle aperture of the fourth ventricle	Apertura mediana ventriculi quarti
Lateral aperture of the IV ventricle	Apertura lateralis ventriculi quarti
Pons	Pons
Middle cerebellar pedicle	Pedunculus cerebellaris medius
Lower cerebellar leg	Pedunculus cerebellaris superior
Ventral part of the Pons	Pars ventralis (basilaris) pontis
Dorsal part of the Pons (Pons tire)	Pars dorsalis pontis (Tegmentum pontis)
Trapezoidal body	Corpus trapesoideum
Cerebellum leaflets	Folia cerebelli
Cerebellar worm	Vermis cerebelli
Cerebellar hemisphere	Hemispherium cerebelli
Knot	Nodulus
Shred	Flocculus
Cerebellum tree of life	Arbor vitae cerebelli
Cerebellar cortex	Cortex cerebelli
Jagged core	Nucleus dentatus
Cork-shaped core	Nucleus emboliformis
Spherical core	Nucleus globosus
The core of the tent	Nucleus fastigii
Vagus nerve triangle	Trigonum nervi vagi

3.3. The solution of situational problems.

1. Two patients are in the neurology department, one of them is dominated by imbalance, gait, the other has an awkward limb movement, which is especially pronounced with precise movements. What parts of the cerebellum are affected in each of the patients?

2. The patient had hemorrhage in the region of the medulla oblongata; what cranial nerve nuclei might be affected?

4. Assignment for the next lesson.

Theme: "Hindbrain: Pons, cerebellum. External and internal structure, functions. Medulla oblongata: external and internal structure, functions. IV ventricle. Rhomboid fossa. Isthmus of the Rhomboid brain. "

App 2

The list of questions for the test control of knowledge gained in the current lesson

1. In which part of the brain are the nuclei of V - VIII pairs of cranial nerves?
2. In which part of the brain are the nuclei of IX - XII pairs of cranial nerves?
5. What is the Rhomboid fossa formed?
6. List the legs of the cerebellum?
7. What structure of the brain includes the Pons?
8. What is the border between the dorsal surfaces of the Pons and medulla oblongata?
9. What part is the superior cerebral sail?
10. What are pyramids part of?
11. Where is the core of the tent?
12. What is the localization of the nucleus of the trapezius?
13. What unites the rhomboid isthmus?
14. The nuclei of which cranial nerves are located in the Pons?
15. To which parts of the brain are the superior cerebellar legs directed?
16. What nuclei are located in the medulla oblongata?
17. What nuclei belong to the trigeminal nerve?
18. For what anatomical formations is the core of the single path common?
19. Where is the lower salivary nucleus located?
20. What nuclei belong to the vagus nerve?
21. What restrict the pyramids?
22. What anatomical formations are limited by the posterior median fissure and the posterolateral groove?
23. What anatomical formation is involved in the formation of the walls of the IV ventricle?
24. What forms the anteroposterior wall of the IV ventricle?
25. What is the localization of the hole Magendi connecting the cavity of the IV ventricle with the subarachnoid space?
26. What belongs to the relief of the bottom of the IV ventricle?
27. Where is the bluish place located?
28. What kernels are located in lateral corners of a rhomboid fossa?
29. What are the nuclei of the cochlear part VIII of the cranial nerve pair called?
30. What are the nuclei of the XI pair of cranial nerves?
31. What is the loop triangle limited to?
32. What are the formations into which the fibers of the trapezoidal body divide the Pons?
33. What anatomical formations are located in the front (basilar part) of the Pons?
34. List the nuclei that are in the cerebellum?
35. What parts of the brain is the cerebellum connected to with the help of the lower cerebellar legs?
36. Where is the motor nucleus of the accessory nerve located?
37. Where is the core of the single path?

38. For which cranial nerves is the double nucleus a common nucleus?
39. Where is the superior salivary nucleus located?
40. Which nuclei belong to the glossopharyngeal nerve?
41. What is the conditional border between the medulla oblongata and spinal cord called?
42. Nuclei, which cranial nerves are located in the medulla oblongata?
43. What are the walls of the IV ventricle called?
44. What is adjacent to the lower cerebral sail?
45. What is the connection between the IV ventricular cavity in the posterior lower corner of?
46. What formations belong to the relief of the bottom of the IV ventricle?
47. What formations are in the front sections of the border groove?
48. What are cranial nerves called, the nuclei of which are projected in the lower triangle of the rhomboid fossa?
49. What nuclei belong to the vestibular part of the VIII pair of cranial nerves?
50. How many nuclei does the XII pair of cranial nerves have?
51. What nuclei are located in the medulla oblongata?
52. Which nuclei belong to the trigeminal nerve?
52. For which cranial nerves is the core of the single pathway the common core?
53. In which parts of the brain is the lower salivary nucleus located?
- What nuclei belong to the vagus nerve?
54. What limit the pyramids?
55. What structures are limited by the posterior median fissure and the posterolateral groove?
56. What structures are involved in the formation of the walls of the IV ventricle?
57. What structures form the anteroposterior wall of the IV ventricle?
58. Where is the Magendi hole connecting the IV ventricle cavity to the subarachnoid space?
59. What formations belong to the relief of the bottom of the IV ventricle?
60. Where is the bluish spot located?
61. What pair of cranial nerve nuclei are located in the lateral corners of the rhomboid fossa?
62. List the nuclei of the cochlear part VIII of a pair of cranial nerves?
63. How many nuclei does the XI pair of cranial nerves have?
64. What is the correct combination of cerebellum nuclei?
65. What is the cerebellum connected to with the help of the lower cerebellar legs?
66. In which parts of the brain stem is the motor nucleus of the accessory nerve located?
67. In which sections of the brain stem is the core of the solitary path?
68. For which pairs of cranial nerves is the double nucleus a common nucleus?
69. In what sections of the brain stem is the superior salivary nucleus located?
70. Which nuclei belong to the glossopharyngeal nerve?
71. What is the conditional border between the medulla oblongata and spinal cord called?
72. What are the pairs of cranial nerves whose nuclei are located in the medulla oblongata?
73. In which part of the brain are the nuclei of the V – VIII pairs of cranial nerves?
74. In which part of the brain are the nuclei of IX – XII pairs of cranial nerves?
75. What is the Rhomboid fossa formed?