METHODOLOGICAL RECOMMENDATIONS FOR INDEPENDENT WORK OF STUDENTS

DISCIPLINE: NEUROLOGY

DISCIPLINE CODE: NEUR 5306

EP NAME: 6B10101 «GENERAL MEDICINE»

STUDY HOURS / CREDITS: 150 HOURS (5 CREDITS),

COURSE AND SEMESTER OF STUDY: 5 COURSE, 9 SEMESTER

INDEPENDENT WORK: 30/70 HOURS

SHYMKENT, 2023

Methodological recommendations for independent work of students were developed in accordance with the work program of the discipline (syllabus) "Neurology" and discussed at a meeting of the department

Protocol № 1 dated 28.08.2023

Head of Department Zharkinbekova N.A.

SRS №. 1

1. Topic: Transverse myelitis. Multiple sclerosis. Guillain-Barré Syndrome
2. Purpose: to provide direction to students for independent study of the history of neurology.
3. Tasks:
4. Introduction to Neurology.
5. The accumulation of neurological knowledge in ancient times.
6. The development of neurology in ancient Egypt.
7. The development of neurology in the era of feudalism.
8. The development of neurology in the XVIII, XIX, XX centuries.
9. Development of clinical neuropathology.
10. Experimental neuropathology.
11. Development of the morphology of the nervous system.
12. Study of microscopic structures of the nervous system.
13. Execution / evaluation form. SRO verification is carried out during the SROP:
14. Work with educational and additional literature.
15. Solution and preparation of test items for a clinical case developed by a student.
16. Analysis of scientific medical articles, work with a search database (PubMed, MEDLINE, Web of Science, etc.).
17. Use of digital educational resources.
18. SRO fulfillment criteria: * are given in Appendix 1.
19. Terms of delivery: 1st day of classes.
20. Literature:
21. Main:
22. 1. E.I. Gusev Neurology and Neurosurgery. In 2 t. T. 1. Neurology: textbook / E. I. Gusev, A. N. Konovalov, V. I. Skvortsova. - 4th ed. add .; Min. education and science of the Russian Federation. Recommended by IM Sechenov First Moscow State Medical University. - M .: GEOTAR - Media, 2015.
23. 2. Akhmetova Zh.B. Semiotics of lesions of cranial nerves: a tutorial / Zh. B. Akhmetova. - 2nd ed. - Karaganda: AҚNҰR, 2019 .-- 162 p. Copies: total: 15 - ChZ-2 (2), ChZ-3 (1), AUL (12)
24. 3. Kispaeva T. T. Atlas of neurology: a tutorial / T. T. Kispaeva. - 2nd ed. - Karaganda: AҚNҰR, 2019 .-- 126 p. Copies: total: 25 - ChZ-2 (2), ChZ-3 (1), AUL (22)
25. Additional:
26. 1. Neurology. National leadership. Short edition: manual / ed. E. I. Guseva. - M.: GEOTAR - Media, 2016. c)

2. Abdrakhmanova, M. G. Modern principles of rehabilitation of neurological patients: a training manual / M. G. Abdrakhmanova, E. V. Epifantseva, D. S. Shaikenov; Ministry of Health and Social Development of the Republic of Kazakhstan. KSMU. - Karaganda: FE "Aunor", 2015

Electronic resources:

1. Physician consultant. Neurology. Version. 1. 2 [Electronic resource]: manual. - Electronic text data. (127 Mb). - M.: GEOTAR - Media, 2009.
2. Neurosurgery [Electronic resource]: textbook / S.V. Mozhaev [and others]. - 2nd ed., Rev. and add. - Electron. text data. (50.3 Mb). - M .: Ed. group "GEOTAR-Media", 2009.
3. Nervous diseases for general practitioners [Multimedia]: textbook / ed. I.N.Denisova. - Electron. Dan. (105 Mb). - Almaty: ATRG Kazakhstan with the participation of Cordis & Medio, 2006.
4. Physiology of higher nervous activity [Electronic resource]: methodical rivers. for students honey. fac. / comp. D. A. Adilbekova - Electron. text data. (388 Kb). - Shymkent: B. and., B. g. -

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3 Student advisor http://www.studmedlib.ru/

4 Open University of Kazakhstan https://openu.kz/kz

5 Law (access in the reference and information sector) https://zan.kz/ru

6 Paragraph https://online.zakon.kz/Medicine/
7 Scientific electronic library https://elibrary.ru/

8 Ashyk kitapkhana https: // kitap.kz/
9 Thomson Reuters www.webofknowledge.com

10 ScienceDirect http://www.sciencedirect.com/
11 Scopus https://www.scopus.com/

8. Control:
Question 1. The history of the development of ideas about the nervous system.
Question 2. The history of the formation of neurology as a science.
Question 3. Development of neurology in Western European countries
Question 4. Development of neurology in Russia and Kazakhstan.
Question 5. Scientific heritage of Abu Ali ibn Sina in the field of neurology.
Question 6. Types of neurology What studies the subject of neurology, its tasks?
Question 7. Who was the founder of the neurological discipline?
Question 8. Tell us about the neurological views of Avicenna and his predecessors.
Question 9. Tell us about the achievements of neurology, about its future.
Question 10. Tell us about the nervous tissue and its components.

SRS №. 2

1. Topic: Technique of LP. Electroencephalography, diagnostic capabilities. Electroneuromyography, diagnostic capabilities.
2. Purpose: To consolidate the knowledge of students on the study of the technique of lumbar puncture, EEG, ENMG indications and contraindications for conducting. To consolidate theoretical knowledge and practical skills.
3. Tasks:
1. Lumbar puncture as a diagnostic method.
2. Indications for lumbar puncture.

3. Contraindications to lumbar puncture.
4. Equipment and preparation for lumbar puncture.
5. Features of the conduct.
6. Technique of execution.
7. Complications of lumbar puncture.
8. Interpretation of the results of laboratory tests of cerebrospinal fluid.
9. Historical aspects of the development of the doctrine of the work of the brain.
10. The main units of the electroencephalograph.
11. Amplifiers of biopotentials, principles of work.
12. Methods for studying the potentials of the brain.
13. Basic rhythms of the EEG.
14. Functional tests.
15. Rules for EEG registration, safety precautions.
16. Artifacts and main mistakes in registration of brain work.
17. The device of the electroneuromyogrof apparatus.
18. Types of electromyography.
19. Technique of surface electroneuromyography.
20. Technique of needle electroneuromyography.
21. Technique for conducting stimulation electroneuromyography.
22. Indications for carrying out.
23. Contraindications and complications.
4. Form of execution:
1. Work with educational and additional literature
2. Solution and preparation of test tasks for a clinical case developed by a student. Analysis of scientific medical articles, work with a search database (PubMed, MEDLINE, Web of Science, etc.).
1. Self-supervision of patients, writing an educational history of the disease.
2. Use of digital educational resources.

5. Performance criteria: * are given in Appendix 1.
6. Due date: 2nd day of classes
7. Literature:
Main:
1. E.I. Gusev Neurology and Neurosurgery. In 2 t. T. 1. Neurology: textbook / E. I. Gusev, A. N. Konovalov, V. I. Skvortsova. - 4th ed. add .; Min. education and science of the Russian Federation. Recommended by IM Sechenov First Moscow State Medical University. - M .: GEOTAR - Media, 2015.
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2. 1. Electronic base

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5	Law (access in the reference and information sector)	https://zan.kz/ru
6	Paragraph	https://online.zakon.kz/Medicine/
7	Scientific electronic library	https://elibrary.ru/
8	Open library	https:// kitap.kz/
9	Thomson reuters	www.webofknowledge.com
10	ScienceDirect	http://www.sciencedirect.com/
11	Scopus	https://www.scopus.com/

8. Control:
Question 1. To what age of intrauterine development the length of the spinal cord is equal to the length of the spinal canal.
Question 2. At the level of which vertebra in newborns is the lower end of the spinal cord located?
Question 3. At the level of which vertebra in newborns is the lower end of the spinal cord located.
Question 4. At the level of which vertebra in adults is the lower end of the spinal cord located?
Question 5. How many segments are secreted in the spinal cord.
Question 6. What is the length of the spinal cord in a newborn?
Question 7. What is the length of the spinal cord in an adult?
Question 8. Absolute contraindications for lumbar puncture.
Question 9. At what level is lumbar puncture performed in newborns.
Question 10. At what level is lumbar puncture performed in adults.
Question 11. The concept of the EEG method. Principle of operation.

Question 12. The main units of the electroencephalograph.
Question 13. Amplifiers of biopotentials.
Question 14. Safety precautions when registering biopotentials.
Question 15. The emergence of electrical potentials of the brain. Localization methods.
Question 16. Method of EEG registration.
Question 17. Rules for applying electrodes. Rule "10-20", artifacts (network, hardware, from a biological object).
Question 18. EEG rhythms.
Question 19. Diagnosis of diseases. Pathological rhythms.
Question 20. Physiological and pathological waves on the EEG.
Question 21. What is electroneuromyography.
Question 22. The role of ENMG in diagnosis.
Question 23. Registration and analysis of indicators of evoked potentials (EP) of muscles and nerve formations (latent period, amplitude, shape, duration of EP).
Question 24. Determination of the number of functioning motor units (DE).
Question 25. Measurement of the impulse conduction velocity (SPI) along the sensory and motor peripheral nerves.
Question 26. Determination of motosensory and craniocaudal coefficients, as well as the presence of asymmetry and deviations from the norm.
Question 27. Methods for registering ENMG.
Question 28. Rules for applying electrodes.
Question 29. Artifacts.
Question 30. The principle of ENMG.

SRS No. 3
1. Topic: Possibilities of laboratory diagnostics in neurology.
2. Purpose: to provide direction for students to independently study the possibilities of laboratory diagnostics in neurology. To consolidate theoretical knowledge and practical skills.
3. Tasks:
1. Research of hemostasis.
2. Hormonal research.
3. Biochemical research.
4. General analyzes of blood and urine, cerebrospinal fluid.
5. Immunoenzymatic and chemiluminescent diagnostics.
6. Diagnostics of antifosfolipidnogo syndrome.
7. PCR diagnostics of any material.
8. Bacteriological research.
9. Methods of DNA diagnostics of hereditary pathology.
4. Form of execution:
1. Solving situational tasks. 8. Control:
Question 1. To what age of intrauterine development the length of the spinal cord is equal to the length of the spinal canal.
Question 2. At the level of which vertebra in newborns is the lower end of the spinal cord located?
Question 3. At the level of which vertebra in newborns is the lower end of the spinal cord located.
Question 4. At the level of which vertebra in adults is the lower end of the spinal cord located?
Question 5. How many segments are secreted in the spinal cord.
Question 6. What is the length of the spinal cord in a newborn?
Question 7. What is the length of the spinal cord in an adult?

Question 8. Absolute contraindications for lumbar puncture.
Question 9. At what level is lumbar puncture performed in newborns.
Question 10. At what level is lumbar puncture performed in adults.
Question 11. The concept of the EEG method. Principle of operation.
Question 12. The main units of the electroencephalograph.
Question 13. Amplifiers of biopotentials.
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Question 16. Method of EEG registration.
Question 17. Rules for applying electrodes. Rule "10-20", artifacts (network, hardware, from a biological object).
Question 18. EEG rhythms.
Question 19. Diagnosis of diseases. Pathological rhythms.
Question 20. Physiological and pathological waves on the EEG.
Question 21. What is electroneuromyography.
Question 22. The role of ENMG in diagnosis.
Question 23. Registration and analysis of indicators of evoked potentials (EP) of muscles and nerve formations (latent period, amplitude, shape, duration of EP).
Question 24. Determination of the number of functioning motor units (DE).
Question 25. Measurement of the impulse conduction velocity (SPI) along the sensory and motor peripheral nerves.
Question 26. Determination of motosensory and craniocaudal coefficients, as well as the presence of asymmetry and deviations from the norm.
Question 27. Methods for registering ENMG.
Question 28. Rules for applying electrodes.
Question 29. Artifacts.
Question 30. The principle of ENMG.

SRS . 3
1. Topic: Possibilities of laboratory diagnostics in neurology.
2. Purpose: to provide direction for students to independently study the possibilities of laboratory diagnostics in neurology. To consolidate theoretical knowledge and practical skills.
3. Tasks:
1. Research of hemostasis.
2. Hormonal research.
3. Biochemical research.
4. General analyzes of blood and urine, cerebrospinal fluid.
5. Immunoenzymatic and chemiluminescent diagnostics.
6. Diagnostics of antifosfolipidnogo syndrome.
7. PCR diagnostics of any material.
8. Bacteriological research.
9. Methods of DNA diagnostics of hereditary pathology.
4. Form of execution:
1. Solving situational tasks.

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5	Law (access in the reference and information sector)	https://zan.kz/ru
6	Paragraph	https://online.zakon.kz/Medicine/
7	Scientific electronic library	https://elibrary.ru/
8	Open library	https:// kitap.kz/
9	Thomson reuters	www.webofknowledge.com
10	ScienceDirect	http://www.sciencedirect.com/
11	Scopus	https://www.scopus.com/

8. Control:

1. The content of chlorides in the cerebrospinal fluid normally ranges from
a) 80-110 mmol / l
b) 40-60 mmol / l
c) 200-260 mmol / l
d) 120-130 mmol / l

2. Epidemiological history is important if suspected
a) for meningococcal meningitis
b) herpetic meningoencephalitis
c) fungal meningitis
d) for meningitis caused by Pseudomonas aeruginosa

3. Normally, the level of hematocrit in women is
a) 0.36-0.42 / l (36-42%)
b) 0.12-0.26 / l (12-26%)
c) 0.56-0.68 / l (56-68%)
d) 0.78-0.96 / l (78-96%)

4. Significant decrease in the level of sugar in the cerebrospinal fluid
(up to 0.1 g / l) is characteristic of meningitis caused by
a) influenza viruses
b) pneumococcus
c) mumps virus
d) tubercle bacillus

5. A blood test for hepatocerebral dystrophy reveals
a) neutrophilic leukocytosis
b) lymphocytosis
c) acceleration of ESR
d) decrease in hemoglobin
e) thrombocytopenia

6. The glucose content in the cerebrospinal fluid of a healthy person fluctuates within
a) 1.2-2.2 mmol / l
b) 2.5-4.4 mmol / l
c) 3.6-5.2 mmol / l
d) 2.6-5.2 mmol / l
e) 0.8-5.2 mmol / L

7. Study of the plasma of a patient with hepatocerebral dystrophy reveals
a) increased levels of ceruloplasmin and hypocupremia
b) a decrease in the level of ceruloplasmin and hypercupremia
c) increased levels of ceruloplasmin and hypercupremia

d) a decrease in the level of ceruloplasmin and hypocupremia
8. The bleeding time (Duke's method) in a healthy person does not exceed
a) 8 min
b) 4 minutes
c) 10 min
d) 2 minutes
9. The study of cellular immunity in HIV infection reveals
a) a decrease in the number of T-helpers
b) an increase in the number of T-suppressors
c) a decrease in the number of T-killers
d) an increase in the number of B-lymphocytes
e) increasing the number of T-helpers
10. The hemostasis system includes
a) fibrinolysis factors
b) plasma factors
c) anticoagulants
d) platelets
e) all of the above (+)
11. The external mechanism of hemostasis includes activation
a) factor VII (+)
b) factor VIII
c) factor IX
d) factor XII
e) high molecular weight kininogen
12. Thrombin is formed by proteolysis of factor II
a) factor I
b) factor VII
c) factor IXa
d) factor Xa (+)
e) factor XIII
13. Vascular - platelet hemostasis belongs to the function
a) proteolysis
b) adhesive-aggregation (+)
c) hydrolysis
d) lysis of euglobulins
e) fibrinolysis
14. An anticoagulant is
a) plasminogen
b) factor III
c) antithrombin III (+)
d) streptokinase
e) ADP
15. Heparin therapy can be controlled
a) activated partial thromboplastin time (+)
b) lysis of euglobulins
c) retraction of the blood clot
d) the concentration of fibrinogen
e) platelet aggregation

16. Diagnostic value of fibrinogen determination
a) coagulation factor, blood viscosity
b) independent risk factor of myocardial infarction and stroke
c) acute phase protein
d) platelet aggregation cofactor
e) all of the above is true (+)
17. The causes of xanthochromia of cerebrospinal fluid are
a) increased blood-brain barrier permeability in newborns (+)
b) medicinal substances and lipochromes
c) bilirubin
d) the breakdown of hemoglobinд) all of the above
18. The reasons for the increase in protein in the cerebrospinal fluid are
a) exudation processes during inflammation of the meningeal membranes
b) disintegration of tumor cells
c) compression of liquor spaces
d) all of the above factors (+)
e) none of the reasons listed
19. The level of glucose in the cerebrospinal fluid decreases with
a) brain tumors
b) brain trauma
c) meningitis (+)
d) all the listed diseases
e) never changes
20. The reason for the formation of a fibrinous film when the cerebrospinal fluid is standing is
a) precipitation of dissolved protein
b) an admixture of bacteria from the air
c) high activity of plasmin in the cerebrospinal fluid
d) precipitation of fibrin formed during exudation of proteins into the cerebrospinal fluid pathways (+)
e) all of the above factors
21. The cytosis of the lumbar cerebrospinal fluid of a healthy adult is
a) About cells in 1 μl
b) from 1 to 5 cells in 1 μl (+)
c) 10 cells in 1 μl
d) 10-50 cells in 1 μl
e) over 50 cells in 1 μl

SRS No. 4
1. Topic: Neurological syndromes in visceral pathology.
2. Purpose: to give direction to students for independent study of issues of diagnosis, prognosis, differential diagnosis, clinic of neurological syndromes in visceral pathology.
3. Tasks:
1. Neurological syndromes in bronchopulmonary pathology.
2. Neurological syndromes in gastrointestinal tract pathology.
3. Neurological syndromes in liver pathology.
4. Neurological syndromes in pathology of the biliary tract.
5. Neurological syndromes in kidney pathology.
6. Neurological syndromes in the pathology of the pelvic organs.

4. Form of execution:
1. Work with educational and additional literature.
2. Solution and preparation of test tasks for a clinical case developed by a student.
3. Analysis of scientific medical articles, work with a search database (PubMed, MEDLINE, Web of Science, etc.).
4. Self-supervision of patients, writing an educational history of the disease.
5. Use of digital educational resources
5. Performance criteria: * are given in Appendix 1.
6. Due date: 4th day of classes.
7. Literature:
Main:
1. E.I. Gusev Neurology and Neurosurgery. In 2 t. T. 1. Neurology: textbook / E. I. Gusev, A. N. Konovalov, V. I. Skvortsova. - 4th ed. add .; Min. education and science of the Russian Federation. Recommended by IM Sechenov First Moscow State Medical University. - M .: GEOTAR - Media, 2015.
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6	Paragraph	https://online.zakon.kz/Medicine/
7	Scientific electronic library	https://elibrary.ru/
8	Ashyk kitapkhana	https:// kitap.kz/
9	Thomson reuters	www.webofknowledge.com
10	ScienceDirect	http://www.sciencedirect.com/

11	Scopus	https://www.scopus.com/

8. Control:
Question 1. Etiopathogenesis of development of neurological syndromes in bronchopulmonary pathology.
Question 2. The main clinical symptoms.
Question 3. Differential diagnosis of neurological syndromes in bronchopulmonary pathology.
Question 4. Etiopathogenesis of the development of neurological syndromes in gastrointestinal pathology.
Question 5. The main clinical symptoms.
Question 6. Differential diagnosis of neurological syndromes in gastrointestinal pathology.
Question 7. Etiopathogenesis of development of neurological syndromes in pathology of the liver and biliary tract.
Question 8. The main clinical symptoms.
Question 9. Differential diagnosis of neurological syndromes in pathology of the liver and biliary tract.
Question 10. Etiopathogenesis of development of neurological syndromes in pathology of the kidneys and pelvic organs.
Question11. The main clinical symptoms.
Question 12. Differential diagnosis of neurological syndromes in pathology of the kidneys and pelvic organs.

SRS No. 5
1. Topic: Neurological syndromes in endocrine pathology.
2. Purpose: to give direction to students for independent study of issues of diagnosis, prognosis, differential diagnosis, clinic of neurological syndromes in endocrine pathology.
3. Tasks:
1. Neurological syndromes in adrenal dysfunction.
2. Neurological syndromes with dysfunction of the gonads.
3. Neurological syndromes in thyroid dysfunction.
4. Neurological syndromes with parathyroid gland dysfunction.
5. Neurological syndromes in the pathology of the pancreas.
4. Form of execution:
1. Solving situational tasks.
2. Demonstration of practical skills.
5. Performance criteria: * are given in Appendix 1.
6. Due date: 5th day of classes.
7. Literature:
Main:
1. E.I. Gusev Neurology and Neurosurgery. In 2 t. T. 1. Neurology: textbook / E. I. Gusev, A. N. Konovalov, V. I. Skvortsova. - 4th ed. add .; Min. education and science of the Russian Federation. Recommended by IM Sechenov First Moscow State Medical University. - M .: GEOTAR - Media, 2015.
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1. Neurology. National leadership. Short edition: manual / ed. E. I. Guseva. - M.: GEOTAR - Media, 2016. c)
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6	Paragraph	https://online.zakon.kz/Medicine/
7	Scientific electronic library	https://elibrary.ru/
8	Open Library	https:// kitap.kz/
9	Thomson reuters	www.webofknowledge.com
10	ScienceDirect	http://www.sciencedirect.com/
11	Scopus	https://www.scopus.com/

8. Control:
Question 1. Etiopathogenesis of the development of neurological syndromes in adrenal dysfunction.
Question 2. The main clinical symptoms.
Question 3. Differential diagnosis of neurological syndromes in adrenal dysfunction.
Question 4. Etiopathogenesis of the development of neurological syndromes with dysfunction of the gonads.
Question 5. The main clinical symptoms.
Question 6. Differential diagnosis of neurological syndromes with dysfunction of the gonads.
Question 7. Etiopathogenesis of the development of neurological syndromes in the pathology of the parathyroid glands.
Question 8. The main clinical symptoms.
Question 9. Differential diagnosis of neurological syndromes in the pathology of the parathyroid glands.
Question 10. Etiopathogenesis of the development of neurological syndromes in thyroid dysfunction.
Question11. The main clinical symptoms.

Question 12. Differential diagnosis of neurological syndromes in thyroid dysfunction.
Question 13. Etiopathogenesis of the development of neurological syndromes in pancreatic dysfunction.
Question 14. The main clinical symptoms.
Question 15. Differential diagnosis of neurological syndromes in pancreatic dysfunction.
...
SRS No. 6
1. Topic: Emergencies in neuroology.
2. Purpose: to give direction to students for independent study of issues of diagnosis, prognosis, differential diagnosis, clinic of neoplastic states in neuroology.
3. Tasks:
1. Syndrome of sudden impairment of consciousness (fainting, col-laps, coma of unspecified genesis.
2. The main clinical characteristics of the levels of wakefulness
(classification).
3. Characteristics of the causes of loss of consciousness, depending on the rate
its development and the timing of the existence of violations.
4. Edema of the brain.
5. Definition, etiopathogenesis, classification of cerebral edema.
6. Clinical manifestations of cerebral edema.
7. Diagnosis of cerebral edema.
8. Emergency therapy of cerebral edema.
9. Occlusive syndrome (acute occlusive hydrocephalus)
10. Epileptic syndromes.
11. Convulsive syndrome.
12. Convulsive syndrome in children mimicking an epileptic seizure.
13. Meningeal syndromes.
4. Form of execution:
1. Work with educational and additional literature.
2. Solution and preparation of test tasks for a clinical case developed by a student.
3. Analysis of scientific medical articles, work with a search database (PubMed, MEDLINE, Web of Science, etc.).
4. Self-supervision of patients, writing an educational history of the disease.
5. Use of digital educational resources.
5. Performance criteria: * are given in Appendix 1.
6. Due date: 6th day of classes.
7. Literature: Main:
1. E.I. Gusev Neurology and Neurosurgery. In 2 t. T. 1. Neurology: textbook / E. I. Gusev, A. N. Konovalov, V. I. Skvortsova. - 4th ed. add .; Min. education and science of the Russian Federation. Recommended by IM Sechenov First Moscow State Medical University. - M .: GEOTAR - Media, 2015.
2. Akhmetova Zh.B. Semiotics of lesions of cranial nerves: a tutorial / Zh. B. Akhmetova. - 2nd ed. - Karaganda: AҚNҰR, 2019 .-- 162 p. Copies: total: 15 - ChZ-2 (2), ChZ-3 (1), AUL (12)
3. Kispaeva T. T. Atlas of neurology: a tutorial / T. T. Kispaeva. - 2nd ed. - Karaganda: AҚNҰR, 2019 .-- 126 p. Copies: total: 25 - ChZ-2 (2), ChZ-3 (1), AUL (22)
Additional:
1. Neurology. National leadership. Short edition: manual / ed. E. I. Guseva. - M.: GEOTAR - Media, 2016.
c)

2. Abdrakhmanova, MG Modern principles of rehabilitation of neurological patients: a teaching manual / MG Abdrakhmanova, EV Epifantseva, DS Shaikenov; Ministry of Health and Social Development of the Republic of Kazakhstan. KSMU. - Karaganda: FE "Aunor", 2015

Electronic resources:

1. Physician consultant. Neurology. Version. 1. 2 [Electronic resource]: manual. - Electronic text data. (127 Mb). - M.: GEOTAR - Media, 2009.
2. Neurosurgery [Electronic resource]: textbook / S.V. Mozhaev [and others]. - 2nd ed., Rev. and add. - Electron. text data. (50.3 Mb). - M .: Ed. group "GEOTAR-Media", 2009.
3. Nervous diseases for general practitioners [Multimedia]: textbook / ed. I.N.Denisova. - Electron. Dan. (105 Mb). - Almaty: ATRG Kazakhstan with the participation of Cordis & Medio, 2006.
4. Physiology of higher nervous activity [Electronic resource]: methodical rivers. for students honey. fac. / comp. D. A. Adilbekova - Electron. text data. (388 Kb). - Shymkent: B. and., B. g. - e-mail. wholesale disc (CD-ROM).

1. 5. Electronic base

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4	Open University of Kazakhstan	https://openu.kz/kz
5	Law (access in the reference and information sector)	https://zan.kz/ru
6	Paragraph	https://online.zakon.kz/Medicine/
7	Scientific electronic library	https://elibrary.ru/
8	Open Library	https:// kitap.kz/
9	Thomson reuters	www.webofknowledge.com
10	ScienceDirect	http://www.sciencedirect.com/
11	Scopus	https://www.scopus.com/

8. Control:

Problem No. 1. Patient R. 14 years old was admitted with complaints of headaches, weakness in the left extremities, decreased vision, convulsive attacks with loss of consciousness. The disease developed acutely, the first attack occurred with convulsions in the left arm and leg, followed by loss of consciousness, bite of the tongue, and involuntary urination. There are no meningeal symptoms. There is a loss of the left halves of the visual fields, the left corner of the mouth lags behind when the teeth are exposed, swallowing is not impaired. Deviation of the tongue to the left. Decreased muscle strength in the left extremities, muscle tone unchanged, tendon and periosteal reflexes on the left are high. Babinsky's reflex on the left. EEG is a focus of epileptic activity in the frontal region of the right hemisphere. CT, MRI of the brain was not performed.

Specify pathological syndromes.

Determine the localization of the pathological process.

Problem No. 2. A 6-year-old child, amid full health, suddenly developed chills, high temperature up to 39 C, headache, and vomiting twice. A day later, he became lethargic, stunned, and had difficulty in making contact. He was admitted to the nervous department 2 days after the onset of the disease in a serious condition with a temperature of 39.5 C, in stupor. On examination, the child lies with the legs brought to the stomach and the head thrown back, the rigidity of the occipital muscles is expressed. The symptoms of Kernig and Brudzinsky (upper and lower) are sharply positive, tendon reflexes are uniformly reduced, there are no pathological

reflexes. In the blood: leukocytosis up to 25 thousand, rods -16%, segmented - 75%, ESR - 35mm / hour. Cerebrospinal fluid is cloudy, flows out under increased pressure, Pandey reaction - ++++, protein - 4.5 g / l, Cytosis 20 thousand / 3, 80% - neutrophils, 20% - lymphocytes, sugar - 1.5 mol / l, chlorides are normal. Bacterioscopic and bacteriological examination of the cerebrospinal fluid revealed diplococcus meningococcus.

Diagnose what pathological syndrome was identified?

Evaluate the cerebrospinal fluid.

Determine the tactics of patient management.

Problem No. 3. Patient A., 6 months old, was admitted to the children's neurological department on the first day of the disease. According to the mother, he fell ill acutely, the temperature rose to 39.5 ºC, vomiting appeared, clonic-tonic convulsions in the limbs, consciousness was preserved. Objectively: serious condition, stupor. The skin is pale, gray, cyanosis, shortness of breath. There is a stiffness of the occipital muscles, Kernig's symptom is poorly expressed from 2 sides, positive with suspension, a large spring is tense, pulsating, the head is thrown back. The right eyelid is lowered, the converging squint on the right, the right pupil is wider than the left. Motor restlessness is noted, especially when swaddling. Tendon reflexes are low, slightly higher on the left. With lumbar puncture, a turbid cerebrospinal fluid was obtained: neutrophilic pleocytosis, protein 1.2 g / l, pneumococcus was isolated.

What are the pathological syndromes?

Establish a clinical diagnosis.

Problem No. 4. A 9-year-old child was taken to the hospital from school after a seizure with loss of consciousness, frolicking suddenly during the lesson. The child grew and developed normally. The parents noticed the first convulsive attack with involuntary urination a year ago. Similar attacks were repeated 4 more times in the future. Heightened excitability and irritability were noted before the attack. In the emergency department, the attack was repeated: the child stood up, screamed, then suddenly fell, lost consciousness. There was a tonic tension in the muscles of the trunk and limbs, and there was no breathing. The face became puffy, cyanotic, the eyes are open, the eyeballs are turned up. After 30 sec. Tonic convulsions were replaced by clonic ones, breathing became hoarse, frothy saliva, stained with blood, came out of the mouth. Involuntary urination was observed. After 30 minutes, the convulsions stopped. After the attack, the child was stunned, disoriented, then fell asleep. Symptoms of focal lesions of the nervous system were not identified. The fundus of the eye is not changed. The EEG recorded bilateral discharges of the "peak-wave" complexes with a frequency of 3 per sec.

Establish a diagnosis.

Justify the tactics of patient management

Problem No. 5. An ambulance delivered a 10-year-old boy in connection with the incessant epileptic seizures that arose an hour ago, in the intervals between which the patient did not regain consciousness. According to relatives, epileptic seizures began to occur a year ago after a traumatic brain injury.

On examination: the patient is in a coma. Clinical-tonic convulsions occur periodically. Tachycardia -100 bpm Revealed the rigidity of the occipital muscles, Kernig's symptom. The pupils are wide, do not respond to light, muscle tone is reduced, there are no pathological reflexes, and does not respond to an injection.

Make a clinical diagnosis.

Urgent measures.

SRS No. 7

1. Topic: Rare syndromes in neurology.

2. Purpose: to give direction to students for independent study of issues of diagnosis, prognosis, differential diagnosis, clinical picture of epilepsy and epileptic syndromes, as well as neuromuscular diseases.
3. Tasks:
1. Otakhara syndrome: symptoms, diagnosis of the disease, causes, methods.
2. West syndrome: symptoms, diagnosis of the disease, causes, methods ..
3. Yantz syndrome: symptoms, diagnosis of the disease, causes, methods ..
4. Charcot-Marie-Tooth disease - hereditary neuropathy, disease symptoms, etiology, pathogenesis, clinical symptoms.
5. Emery-Dreyfus disease, disease symptoms, etiology, pathogenesis, clinical symptoms.
6. Bethlem's disease, disease symptoms, etiology, pathogenesis, clinical symptoms.
7. Rottau-Mortier-Beyer disease, disease symptoms, etiology, pathogenesis, clinical symptoms.
4. Form of execution:
1. Work with educational and additional literature.
2. Solution and preparation of test tasks for a clinical case developed by a student.
3. Analysis of scientific medical articles, work with a search database (PubMed, MEDLINE, Web of Science, etc.).
4. Self-supervision of patients, writing an educational history of the disease.
5. Use of digital educational resources.
5. Performance criteria: * are given in Appendix 1.
6. Due date: 7th day of classes.
7. Literature:
Main:
1. E.I. Gusev Neurology and Neurosurgery. In 2 t. T. 1. Neurology: textbook / E. I. Gusev, A. N. Konovalov, V. I. Skvortsova. - 4th ed. add .; Min. education and science of the Russian Federation. Recommended by IM Sechenov First Moscow State Medical University. - M .: GEOTAR - Media, 2015.
2. Akhmetova Zh.B. Semiotics of lesions of cranial nerves: a tutorial / Zh. B. Akhmetova. - 2nd ed. - Karaganda: AҚNҰR, 2019 .-- 162 p. Copies: total: 15 - ChZ-2 (2), ChZ-3 (1), AUL (12)
3. Kispaeva T. T. Atlas of neurology: a tutorial / T. T. Kispaeva. - 2nd ed. - Karaganda: AҚNҰR, 2019 .-- 126 p. Copies: total: 25 - ChZ-2 (2), ChZ-3 (1), AUL (22) Additional:
1. Neurology. National leadership. Short edition: manual / ed. E. I. Guseva. - M.: GEOTAR - Media, 2016. c)
2. Abdrakhmanova, MG Modern principles of rehabilitation of neurological patients: a teaching manual / MG Abdrakhmanova, EV Epifantseva, DS Shaikenov; Ministry of Health and Social Development of the Republic of Kazakhstan. KSMU. - Karaganda: FE "Aunor", 2015
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1. Physician consultant. Neurology. Version. 1. 2 [Electronic resource]: manual. - Electronic text data. (127 Mb). - M.: GEOTAR - Media, 2009.
2. Neurosurgery [Electronic resource]: textbook / S.V. Mozhaev [and others]. - 2nd ed., Rev. and add. - Electron. text data. (50.3 Mb). - M .: Ed. group "GEOTAR-Media", 2009.
3. Nervous diseases for general practitioners [Multimedia]: textbook / ed. I.N.Denisova. - Electron. Dan. (105 Mb). - Almaty: ATRG Kazakhstan with the participation of Cordis & Medio, 2006.
4. Physiology of higher nervous activity [Electronic resource]: methodical rivers. for students honey. fac. / comp. D. A. Adilbekova - Electron. text data. (388 Kb). - Shymkent: B. and., B. g. - e-mail. wholesale disc (CD-ROM).
5. Electronic base

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2	Republican interuniversity electronic library	http://rmebrk.kz/
3	Student advisor	http://www.studmedlib.ru/
4	Open University of Kazakhstan	https://openu.kz/kz
5	Law (access in the reference and information sector)	https://zan.kz/ru
6	Paragraph	https://online.zakon.kz/Medicine/
7	Scientific electronic library	https://elibrary.ru/
8	Open Library	https:// kitap.kz/
9	Thomson reuters	www.webofknowledge.com
10	ScienceDirect	http://www.sciencedirect.com/
11	Scopus	https://www.scopus.com/

8. Control:
Question 1. What is Otahara Syndrome.
Question 2. What provokes Otahara Syndrome.
Question 3. Clinical symptoms of Otahar Syndrome.
Question 4. Differential diagnosis.
Question 5. Etiology of West syndrome.
Question 6. Classification of West syndrome.
Question 7. Clinical symptoms of West Syndrome.
Question 8. The main clinical symptoms.
Question 9. Differential diagnosis.
Question 10. What is Charcot-Marie-Tooth disease.
Question 11. Etiology, main clinical symptoms Charcot-Marie-Tooth disease.
Question 12. What is Emery-Dreyfus disease.
Question 13. Etiology, main clinical symptoms of Emery-Dreyfus disease.
Question 14. What is Bethlem's disease.
Question 15. Etiology, main clinical symptoms of Emery-Bethlem's disease.
Question 16 What is Rottau-Mortier-Beyer disease.
Question 17. Etiology, main clinical symptoms of Rottau-Mortier-Beyer's disease.
SRS No. 8
1. Topic: Modern possibilities of therapy for nervous diseases.
2. Purpose: to give direction to students for independent study of the issues of modern possibilities of therapy for nervous diseases.
3. Tasks:
1. General information about thrombolysis.
2. Methods of carrying out stereotaxic radiosurgery.
3. Deep electrical stimulation of the brain in extrapyramidal diseases.
4. Stem cell therapy: features and effectiveness.
5. Botulinum therapy in neurology.
6. Microvascular decompression of the trigeminal nerve.
4. Form of execution:
1. Work with educational and additional literature.
2. Solution and preparation of test tasks for a clinical case developed by a student.
3. Analysis of scientific medical articles, work with a search database (PubMed, MEDLINE, Web of Science, etc.).

4. Scientific project.
5. Self-supervision of patients, writing an educational history of the disease.
6. Use of digital educational resources.
5. Performance criteria: * are given in Appendix 1.
6. Due date: 8th day of classes.
7. Literature: **Main:**

1. E.I. Gusev Neurology and Neurosurgery. In 2 t. T. 1. Neurology: textbook / E. I. Gusev, A. N. Konovalov, V. I. Skvortsova. - 4th ed. add .; Min. education and science of the Russian Federation. Recommended by IM Sechenov First Moscow State Medical University. - M .: GEOTAR - Media, 2015.
2. Akhmetova Zh.B. Semiotics of lesions of cranial nerves: a tutorial / Zh. B. Akhmetova. - 2nd ed. - Karaganda: AҚNҰR, 2019 .-- 162 p. Copies: total: 15 - ChZ-2 (2), ChZ-3 (1), AUL (12)
3. Kispaeva T. T. Atlas of neurology: a tutorial / T. T. Kispaeva. - 2nd ed. - Karaganda: AҚNҰR, 2019 .-- 126 p. Copies: total: 25 - ChZ-2 (2), ChZ-3 (1), AUL (22)

Additional:

1. Neurology. National leadership. Short edition: manual / ed. E. I. Guseva. - M.: GEOTAR - Media, 2016. c)
2. Abdrakhmanova, MG Modern principles of rehabilitation of neurological patients: a teaching manual / MG Abdrakhmanova, EV Epifantseva, DS Shaikenov; Ministry of Health and Social Development of the Republic of Kazakhstan. KSMU. - Karaganda: FE "Aunor", 2015

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2. Neurosurgery [Electronic resource]: textbook / S.V. Mozhaev [and others]. - 2nd ed., Rev. and add. - Electron. text data. (50.3 Mb). - M .: Ed. group "GEOTAR-Media", 2009.
3. Nervous diseases for general practitioners [Multimedia]: textbook / ed. I.N.Denisova. - Electron. Dan. (105 Mb). - Almaty: ATRG Kazakhstan with the participation of Cordis & Medio, 2006.
4. Physiology of higher nervous activity [Electronic resource]: methodical rivers. for students honey. fac. / comp. D. A. Adilbekova - Electron. text data. (388 Kb). - Shymkent: B. and., B. g. - e-mail. wholesale disc (CD-ROM).

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5	Law (access in the reference and information sector)	https://zan.kz/ru
6	Paragraph	https://online.zakon.kz/Medicine/
7	Scientific electronic library	https://elibrary.ru/
8	Ashyk kitapkhana	https:// kitap.kz/
9	Thomson reuters	www.webofknowledge.com
10	ScienceDirect	http://www.sciencedirect.com/
11	Scopus	https://www.scopus.com/

8. Control:

Question 1. The purpose of thrombolytic therapy.

Question 2. Used thrombolytic agents.
Question 3. Indications and contraindications for thrombolytic therapy.
Question 4. How does stereotaxic work.
Question 5. Stereotactic body radiotherapy
Question 6. Risks of stereotaxic surgery
Question 7. What is electrical stimulation of the deep zones of the brain.
Question 8. Indications for electrical stimulation of the deep zones of the brain.
Question 9. What are stem cells.
Question 10. Stem cells: species.
Question11. What diseases can be treated with cell therapy?
Question 12. What is botulinum toxin.
Question 13. Indications for botulinum therapy.
Question 14. How is botulinum therapy carried out?
Question 15. What methods of surgical treatment are used for trigeminal neuralgia.

SRS No. 9
1. Topic: Modern research methods in neurology. Patient supervision with a description of the neurological status.
2. Purpose: to give direction to students for independent study of issues of modern research methods in neurology, writing a medical history of a supervised neurological patient.
3. Tasks:
1. Transcranial magnetic stimulation: the essence of the method, indications, contraindications, research methodology.
2. Doppler ultrasound, the essence of the study, indications and contraindications.
3. Basic neuroradiological research methods, indications and contraindications.
4. Suboccipital puncture. Indications and technique of suboccipital puncture.
5. Interviewing the patient and collecting anamnesis.
6. Examination of the patient, observation of the patient's behavior.
7. Research of internal organs.
8. Neurological examination.
9. Neurophysiological examination.
10. Neuroradiological examination.
11. Other laboratory examinations (spinal puncture).
12. Substantiation of topical and clinical diagnoses.
4. Form of execution:
1. Solving situational tasks.
2. Demonstration of practical skills.
5. Performance criteria: * are given in Appendix 1.
6. Due date: 9th day of classes.
7. Literature:

Main: E.I. Gusev Neurology and Neurosurgery. In 2 t. T. 1. Neurology: textbook / E. I. Gusev, A. N. Konovalov, V. I. Skvortsova. - 4th ed. add .; Min. education and science of the Russian Federation. Recommended by IM Sechenov First Moscow State Medical University. - M .: GEOTAR - Media, 2015.
1. Akhmetova Zh.B. Semiotics of lesions of cranial nerves: a tutorial / Zh. B. Akhmetova. - 2nd ed. - Karaganda: AҚNҰR, 2019 .-- 162 p. Copies: total: 15 - ChZ-2 (2), ChZ-3 (1), AUL (12)
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2. Abdrakhmanova, MG Modern principles of rehabilitation of neurological patients: a teaching manual / MG Abdrakhmanova, EV Epifantseva, DS Shaikenov; Ministry of Health and Social Development of the Republic of Kazakhstan. KSMU. - Karaganda: FE "Aunor", 2015

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3. Nervous diseases for general practitioners [Multimedia]: textbook / ed. I.N.Denisova. - Electron. Dan. (105 Mb). - Almaty: ATRG Kazakhstan with the participation of Cordis & Medio, 2006.
4. Physiology of higher nervous activity [Electronic resource]: methodical rivers. for students honey. fac. / comp. D. A. Adilbekova - Electron. text data. (388 Kb). - Shymkent: B. and., B. g. - e-mail. wholesale disc (CD-ROM).

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5	Law (access in the reference and information sector)	https://zan.kz/ru
6	Paragraph	https://online.zakon.kz/Medicine/
7	Scientific electronic library	https://elibrary.ru/
8	Ashyk kitapkhana	https:// kitap.kz/
9	Thomson reuters	www.webofknowledge.com
10	ScienceDirect	http://www.sciencedirect.com/
11	Scopus	https://www.scopus.com/

8. Control:

Question 1. Definition of transcranial magnetic stimulation.
Question 2. The essence of the technique and the mechanism of action of transcranial magnetic stimulation of the motor zones of the cerebral cortex.
Question 3. Indications and contraindications for transcranial magnetic stimulation of the motor areas of the cerebral cortex.
Question 4. The anatomical structure of the brachiocephalic vessels.
Question 5. Indications and contraindications for Doppler ultrasound.
Question 6. Preparation for Doppler ultrasound.
Question 7. The main types of neuroradiological research methods
Question 8. Indications and contraindications for ventriculography.
Question 9. Indications and contraindications for pneumoencephalography.
Question 10. Indications and contraindications for myelography.
Question11. Indications and contraindications for cerebral angiography.
Question 12. Indications and contraindications for spinal angiography.
Question 13. Suboccipital puncture. Indications and technique of suboccipital puncture.

Question 14. General cerebral symptoms (headaches, dizziness, etc.).
Question 15. Meningeal symptoms (stiff neck, Kernig's symptom, Brudzinsky's symptom, Bekhterev's symptom).
Question 16. Assessment of higher mental functions (consciousness, orientation, attention, memory, speech, praxis, gnosis).
Question 17. The motor sphere (muscle strength, muscle tone, the study of coordination of movements).
Question 18. Reflex sphere (normal and pathological reflexes).
Question 19. Sensitive sphere (superficial, deep and complex sensitivity).
Question 20. The structure of the medical history of a neurological patient.

Приложение 1.

Form of control	**Evaluation**	**Evaluation criteria**
Solving and preparing test tasks based on a clinical case developed by a student	**Excellent** Corresponds to the ratings: A (4,0; 95-100%); A- (3,67; 90-94%)	Test tasks contain at least 10 questions. Delivered on time. The basis of the test is meaningful. The test tasks are formulated clearly, correctly, and concretely. Similar and adequate variants of answers. There is a response algorithm. The correct responses are marked correctly.
	Good Corresponds to estimates: B+ (3,33; 85-89%); B (3,0; 80-84%); B- (2,67; 75-79%).	Test tasks contain at least 10 questions. Delivered on time. The basis of the test is informative. The test tasks are formulated clearly, correctly, and concretely. Not the same type of answers. There is a response algorithm. Correct answers are marked correctly.
	Satisfactory Corresponds to estimates C+ (2,33; 70-74%); C (2,0; 65-69%); C- (1,67; 60-64%); D+ (1,0; 50-54%)	Test tasks contain at least 10 questions. Delivered on time. The basis of the test is not meaningful. There are test tasks that are formulated vaguely, incorrectly, and incompletely. Different types of answers. There is a response algorithm. Not all correct answers are marked correctly.
	Unsatisfactory FX(0,5; 25-49%) F (0; 0-24%)	Test tasks contain less than 10 questions. The test basis is meaningless, and the question is not clearly stated. Different types of answers. There is no response algorithm. More than 50% of correct answers are incorrectly marked.

Form of control	Evaluation	Evaluation criteria
Analysis of scientific medical articles, work with the search database (PubMed, MEDLINE, Web of Science, etc.)	**Excellent** Corresponds to the ratings: A (4,0; 95-100%); A- (3,67; 90-94%)	Conducting an analysis of a scientific article: he familiarized himself with the article, paid special attention to the headings, visual material; determined the main topic of the text; then I analyzed the text in detail, highlighted the main thoughts of the author; marked paragraphs that carry the main semantic load; I defined the information, formulated the meaning of each marked paragraph in one sentence. Conducting a review of a scientific article: highlighted the main conclusions and results of the study; He noted the positive, strong aspects of the work, gaps and contradictions.
	Good Corresponds to estimates: B+ (3,33; 85-89%); B (3,0; 80-84%); B- (2,67; 75-79%).	Conducting an analysis of a scientific article: I got acquainted with the article in the abstract, paid special attention to the headings, visual material; I did not always determine the main topic of the text; I did not analyze the text in detail, but highlighted the main thoughts of the author; marked paragraphs that carry the main semantic load; identified the information. Conducting a review of a scientific article: I did not highlight all the main conclusions and results of the study; He noted not all the positive, strong aspects of the work, gaps and contradictions.
	Satisfactory Corresponds to estimates C+ (2,33; 70-74%); C (2,0; 65-69%); C- (1,67; 60-64%); D+ (1,0; 50-54%)	Conducting an analysis of a scientific article: read the article in the abstract, did not pay attention to the headings, visual material; did not determine the main topic of the text; did not highlight the main thoughts of the author; I didn't always mark paragraphs that carry the main semantic load; I didn't formulate the meaning of each marked paragraph in one sentence. Conducting a review of a scientific article: I did not always highlight the main conclusions and results of the study; I failed to note the positive, strong aspects of the work, gaps and contradictions.
	Unsatisfactory FX(0,5; 25-49%) F (0; 0-24%)	I did not conduct an analysis and review of the scientific article.

Form of control	Evaluation	Evaluation criteria
Writing an educational medical history	**Excellent** Corresponds to the ratings: A (4,0; 95-100%); A- (3,67; 90-94%)	Compliance with the basic requirements of writing and registration of educational medical history, detailed collection of all types of anamnesis, plausibility of neurological examination, compliance of the obtained clinical and paraclinical data with age standards, correctness of evaluation of laboratory and functional studies.
	Good Corresponds to estimates: B+ (3,33; 85-89%); B (3,0; 80-84%); B- (2,67; 75-79%).	Compliance with the basic requirements of writing and registration of educational medical history, detailed collection of all types of anamnesis, plausibility of neurological examination, not full compliance of the obtained clinical and paraclinical data with age standards, not always correct assessment of laboratory and functional studies.
	Satisfactory Corresponds to estimates C+ (2,33; 70-74%); C (2,0; 65-69%); C- (1,67; 60-64%); D+ (1,0; 50-54%)	Not basic requirements of writing and execution of educational history, no fee of some kinds of history, not a complete neurological examination, not a full compliance of the obtained clinical and laboratory data age standards, not the correct evaluation of laboratory and functional studies.
	Unsatisfactory Corresponds to estimates: FX(0,5; 25-49%) F (0; 0-24%)	The medical history is clearly copied from each other and / or torn from someone else's text (mainly from the Internet) pieces of text. The medical history was not submitted, or it was submitted at the wrong time.

Criteria for evaluating the method of scientific projects:

№	Position	Criteria	The maximum score
1.	Innovation, uniqueness	The presence of a certain degree of novelty in the scientific project; the unique quality and principle of innovation	10
2.	Relevance	Reflection of the significance of the project of the studied problem, the relevance and significance of the results	20
3.	Quality and accessibility of the description	Accessibility, completeness, quality of systematization of materials, style and culture of presentation	20
4.	Publications and	Availability of publications on the research topic, reports	

	external presentation of the project	and participation in conferences	10
5.	Implementation experience	The presence of positive experience in the practical implementation of the project, with confirmation of the achievement of the planned properties	10
6.	Well conceived	Deep and comprehensive development of a scientific project, forecasting risks and ways to overcome them	10
7.	Social impact	Significance and scale of potential positive social changes in the replication of a scientific project	20
	Total		**Max - 100**

Form of control	**Evaluation**	**Evaluation criteria**
The decision of situational tasks.	**Excellent** Corresponds to the ratings: A (4,0; 95-100%); A- (3,67; 90-94%)	The solution of situational tasks conducted with a detailed description of basic and additional methods of examination, differential diagnosis, diagnosis justification, in terms of etiology and pathogenesis, are able to effectively make rational treatment plan as a result of full awareness of the etiology, pathogenesis of the disease, determined the forecast. Has a pronounced clinical thinking. He is able to defend his point of view and offer an alternative method of treatment in cases where it is not possible to conduct classical methods of treatment.
	Good Corresponds to estimates: B+ (3,33; 85-89%); B (3,0; 80-84%); B- (2,67; 75-79%).	The solution of the situational problem was carried out with a detailed description of the main and additional methods of examination, differential diagnosis, diagnosis, is able to make a treatment plan, using data on the etiology, pathogenesis of the disease, determined the prognosis. Has good clinical thinking.
	Satisfactory Corresponds to estimates C+ (2,33; 70-74%); C (2,0; 65-69%); C- (1,67; 60-64%); D+ (1,0; 50-54%)	The solution of situational tasks conducted with basic description and partial description of additional methods of examination, partly read out differential diagnosis and diagnosis is treatment plan together with the teacher, using not completely accurate data on etiology, pathogenesis of the disease, determined the forecast. Has weak clinical thinking.
	Unsatisfactory FX(0,5; 25-49%)	The solution of the situational problem was carried out without describing the main and without describing additional methods of examination, announced the wrong differential diagnosis and diagnosis, makes a treatment plan only together with the teacher, uses not accurate data on the etiology, pathogenesis of the disease, determined

		the prognosis. Does not have clinical thinking.

Form of control	**Evaluation**	**Evaluation criteria**
Reception of practical skills	**Excellent** Corresponds to the ratings: A (4,0; 95-100%); A- (3,67; 90-94%)	He performed the correct practical work, showed deep knowledge of the equipment and modern methods of physiological research. Presented a full report on the practical work.
	Good Corresponds to estimates: B+ (3,33; 85-89%); B (3,0; 80-84%); B- (2,67; 75-79%).	He performed the correct practical work, showed good knowledge of the equipment and modern methods of physiological research. In the report there are not fundamental errors and inaccuracies.
	Satisfactory Corresponds to estimates C+ (2,33; 70-74%); C (2,0; 65-69%); C- (1,67; 60-64%); D+ (1,0; 50-54%)	I performed the practical work correctly, resorted to the help of a teacher. There are fundamental errors and inaccuracies in the report.
	Unsatisfactory Corresponds to estimates: FX(0,5; 25-49%) F (0; 0-24%)	I was poorly oriented when doing practical work. Completed late. The report contains fundamental inaccuracies and gross errors.