Clinical Neurology

Contents

MENINGITIS.ARACHNOIDITIS

I. Why do we study it?

Infectious diseases of nervous system are one of the important problems of clinical medicine. Meningitis is the most common and the most difficult part of these diseases.

A doctor of any profile always has a task of external recognition of meningitis, prediction of aggravations and providing patients with urgent help, because very often destiny of a patient depends on doctor's knowledge and skills.

Future doctors must be able to diagnose arachnoiditis that may occur after endured infectious diseases, craniocerebral trauma.

II. Study goals:

To know:

1) Classifiction, etiopathogenesis, epidemiology, clinical signs of meningitis, methods of their diagnostics, main principles of treatment (a=II);
2) Etiopathogenesis, classification, clinical manifistations, methods of diagnostics, main principles of treatment of arachnoiditis (a=II).

To be able:

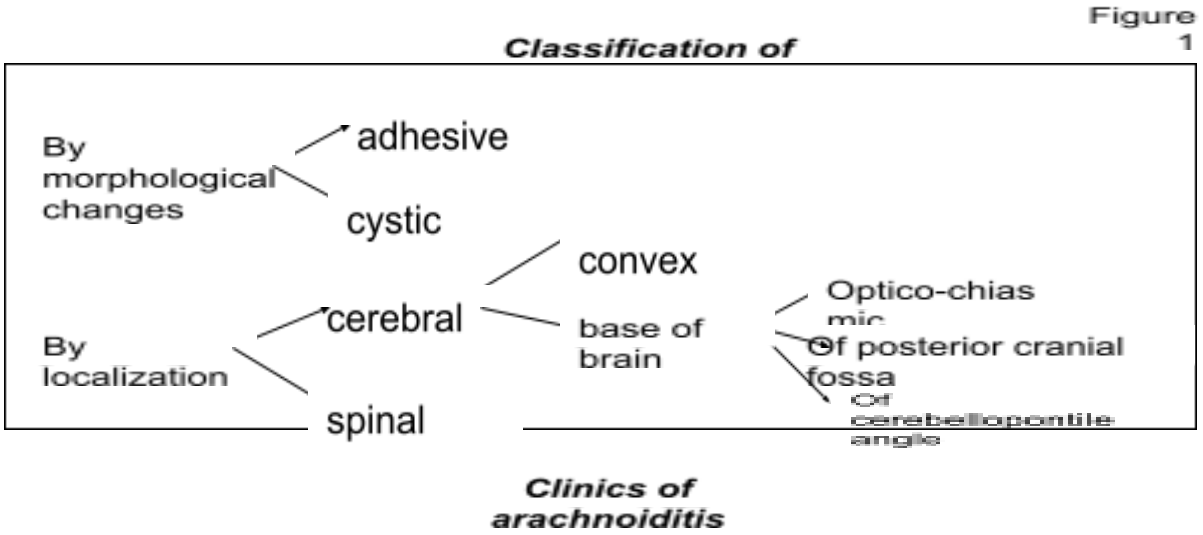
1) To examine a patient for meningitis and arachnoiditis, detect signs of these diseases (a=III);
2) To carry out differential diagnoses with diseases that have similar symptoms(a=III);
3) To choose tactics of treatment of patients with meningitis, arachnoiditis, taking into account degree of severity and nozologic form of the disease (a=III).

III. Educational goals:

1. To train students' carefulness in detecting clinical symptoms of the disease, to develop clinical thinking
2. To cultivate responsibility for the destiny of a patient, timeliness and argumentation of doctor's actions

IV. Contents of the lesson

Figure 1



Main cerebral disturbances (dueto intracranial hypertension)

- headache
- vomiting, nausea
- congesive disks of optic nerves or their atrophy
- dizziness
- epileptic attacks

Focal lesions(depend on localization of the process)

Clinical peculiarities of particular

Convex
- jacksonian epileptical attacks
- asymmetry of reflexes
- more rarely slight paresises of limbs

Optico–chiasmal
- headache in frontal region of head, orbits, bridge of nose
- sight impairment
- bitemporal hemianopsia or concentrical constriction of visual fields
- bitemporal atrophy of discus of nervus opticus
- anosmia
- sleep disturbances, changes of carbohydrate-saline metabolism

Of posterior cranial fossa
- predominate main cerebral symptoms
- pains in the back of the head
- vomiting
- dizziness
- anosmia
- congestive disks of optic nerves

Of cerebellopontile angle
- noise in the ear
- hearing impairment
- unsteadiness, dizziness
- paresis of mimic muscles
- trigeminal neuralgia
- cerebellar symptoms
- slight pyramidal disturbances

Methods of investigation

craniography, pneumoencephalography, investigation of eye-ground, perimetry, CT, MRI of brain,EEG, EXO-EC

Treatment

conservative: anti-inflammatory, dehydrative, absorbable drugs, symptomatic trearment

Surgical: operation in case of cystic and adhesive arachnoiditis

Clinical symptoms of meningitis

Figure 2

Meningeal syndrome

Tunicary symptoms

1. General hyperesthesia and hyperesthesia of organs of senses
2. reactive painful phenomena:
- cheek-bone Behterev's symptom
- painfulness when pressing eyeballs, points of outlet of branches of

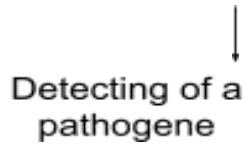
Main cerebral symptoms
- headache
- vomiting
- spasms
- psychomotor agitation
- impairment of consciousness

Syndrome of infectious disease
- fever
- high temperature
- rise of body temperature
- leucocytosis in blood with shifting of the formula to the left, rise of speed of erythrocyte's concretion

Syndrome of inflammatory changes inliquor

Purulent meningitis
- pleocytosis: neutrophilic (thousands of cells in 1 mm^3)

Serous meningitis
- pleocytosis lymphocytic (tens or hundreds of cells in 1 mm^3



3. Muscular tonic tensions:
— rigidity of occipital muscles, long muscles of the back
— Kering's symptoms, upper, middle, lower
Brudzinski's signs

V. Oral questions:

- What is the classification of meningitis?
- What is aetiology, pathogenesis of meningitis?
- What symptoms does meningeal syndrome consist of?
- Describe clinical forms of meningococcosis.
- Give clinical description of different forms of meningitis.
- What changes in liquor are observed together with meningitis?
- Present scheme of meningitis treatment.
- What is aetiology, pathogenesis of arachnoiditis ?
- Give classification and describe clinical manifistations of arachnoiditis.
- Which additional methods are used for diagnostics of arachnoiditis?
- How are patients with arachnoiditis treated?

Tests and typical tasks of II level

№	Typical tasks of II level	Standart of answer
1.	A three-year-old child has been treated for purulent otitis for a week.Suddenly state of the child became worse.Vomiting, headache, fever, rise in temperature up to 39 °C appeared. There was detected rigidity of the muscles of the back of the head, Kering's symptom on the both sides, general hypersthesia. Which disease can be suspected? With the help of investigations can the disease be diagnosed. Give the directions of treatment.	Secondary otitic meningitis. Investigation of liquor. Antibiotics, dehydrative, desintoxicative drugs.
2.	A patient is 40 years old. Two weeks after the flu he started seeing a "net" in front of the eyes, had sight impairment in both eyes, headaches, vomiting. There was detected anisocoria, impairment of reaction of eye pupils on light, concentric constriction of visual field on both sides, optic neuritis. Which disease can be suspected? Prescribe the treatment.	Opticochiasmatic arachnoiditis. Anti-inflammatory, desensitizing therapy (including cortico-steroid therapy), dehydrative, anticholinesterase, absorbable drugs, symptomatic therapy. .

№	Tests of II level	Standart of answer
1	2	3
1.	Name main clinical signs of secondary purulent meningitis: a) lymphocytic pleocytosis b) protein-cellular dissociation in liquor c) high body temperature d) meningeal symptom e) neutrophilic pleocytosis f) increase of sugar level in liquor	c), d), e)

2.	Indicate, which meningitis is characterized by decrease of glucose and chlorides in cerebrospinal fluid: a) syphilitic b) enterovirus c) tuberculous d)herpetic e) parotitic	c)

1	2	3
3.	Indicate symptoms of convex arachnoiditis: a) focal articular attacks b) anisoreflexia of tendinous reflexes c) diplopia d) bulbar lesions e) bitemporal hemianopsis f) concentric constriction of visual field	a); b)

2. Methodic resources for the main stage of the lecture

Professional algorythm of mastering methods of examination of patients with meningitis and arachnoiditis

№	Task	Guidelines	Notes
1. 2.	To master methods of examination of patients with meningitis and arachnoiditis To carry out cure of patients with meningitis and arachnoiditis	To carry out the examination in the next order: 1) complaints of a patient; 2) obtaining anamnesis; 3) detecting of signs of infectious disease; 4) detecting of meningeal symptoms 5) examination of function of cranial nerves; 6) examination of reflectory-motor function 7) investigation of coordination of movements and functions of extrapyramidal system; 8) investigation of sensivity; 9) investigation of higher cortical functions; 10) evaluation of the given additional methods of investigation	Pay attention to presence of signs of infectious disease, main cerebral tunicary syndromes, changes in cerebrospinal fluid.
3.	To find localisation of pathological process. To carry out differential diagnostics. To give clinic diagnosis. To draw up treatment regimen.	To group detected symptoms use, sctructurological scheme of the subject of the lecture.	Pay attention to necessity of control of changes in liquor during treatment of patients with meningitis.

3. Control material for the final stage of the lecture

Atypical tasks of III level

№	Atypical task of III level	Standart of answer
1.	Three weeks after the flu a patient complained of a headache in the morning and in the evening, which was sometimes accompanied by vomiting. Noise in the left ear and hearing impairment gradually appeared. After a week the patient noticed asymmetry of the face(its left part started to work badly, left eye didn't close). He had diplopia when looking to the left and swaying when walking to the left. Give the topic diagnosis. What is the clinical diagnosis? Prescribe additional methods of examination.	Lesion of roots of VIII, VII, VI pairs of cranial nerves on the left and of cerebellum. Arachnoiditis of left cerebellopontile angle. Investigation of liquor, MRI of brain.

4. Materials for methodic provision of students' self-preparation

Approximate chart of independent work with literature on the subject " Meningitis, arachnoiditis"

Main tasks	Guidelines
To learn: 1) etiology, pathogenesis of meningitis and arachnoiditis	To name main aetiological factors, to explain mechanism of pathogenesis
2) classification af meningitis and arachnoiditis	To make the tables with classifications

3) clinical picture, differential diagnostics of meningitis and arachnoiditis	To make the tables of differential diagnostics of different forms of meningitis and arachnoiditis
4) methods of treatment of patients with meningitis and arachnoiditis	To prepare treatment regimen depending on etiology, stage, type of clinical course

ENCEPHALITIS.MYELITIS.ACUTE POLIOMYELITIS

I. Why do we study it?

Neuroinfections make up about one third of all pathology of nervous system. Epidemic situation in the world has changed during last decades. Spread of some diseases has decreased. However new diseases that go with severe lesions of nervous system have appeared. In the environment, as a result of transformation and modification of old pathogenes, new ones are appearing. Some pathogenes are transmitted to the regions, that are geographically distant from the previous place of their spread. The species of a number of infections are changing. That's why study of this subject is essential for every doctor.

II. Study goals:

To know:

1) classification, etiopathogenesis, epidemiology, clinical manifistations of encephalitis, methods of their diagnostics, main principles of treatment (a=II);
2) etiopathogenesis, clinical manifistations, methods of diagnostics, main principles of treatment of myelitis (a=II);
3) etiology, pathogenesis, clinical forms, methods of diagnostics and treatment of acute poliomyelitis (a=II).

To master skills:

of examination of patients with encehpalitis, myelitis and poliomyelitis (a=III).

To be able:

1) to detect signs of encehpalitis, myelitis and poliomyelitis and give topical and clinical diagnosis (a=III);
2) to carry out differential diagnostics with diseases that have similar symptoms (a=III);
3) to choose tactics of treatment of patients with encephalitis, myelitis and poliomyelitis, taking into account degree of severity and nozologic form of the disease (a=III).

III. Educational goals:

1. To cultivate in a student considerate and kind attitude towards patients, suffering from inflammatory diseases of nervous system and their relatives
2. To train attentiveness and ability to choose the most important facts while obtaining the case history of patients with inflammatory diseases of nervous system, logics while carrying out differential diagnostics.
3. To cultivate responsibility in solving the problems of treatment of patients with inflammatory diseases of nervous system.

IV. Contents of the lesson

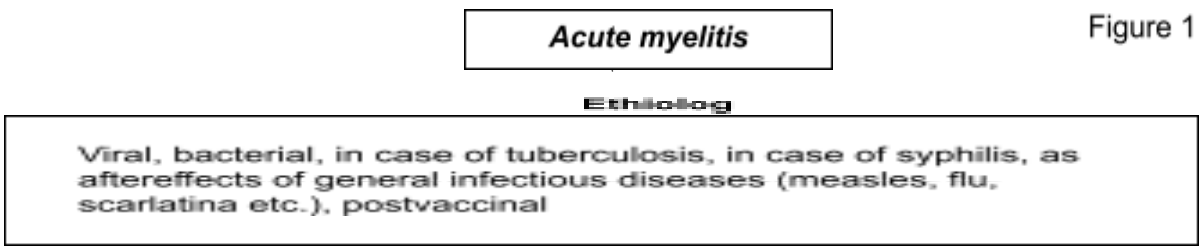


Figure 1

General infection diseases symptoms
– high temperature
– backache
– nerve root pains
– paresthesias

Transversal section of spinal cord syndrome:
– paralyses of muscles lower the level of lesion
– conduction lesions of sensitivity
– pelvic disorder
– decubituses

Diagnos

Inflammatory changes in liquor with increase of protein, absence of block of subarachnoid space

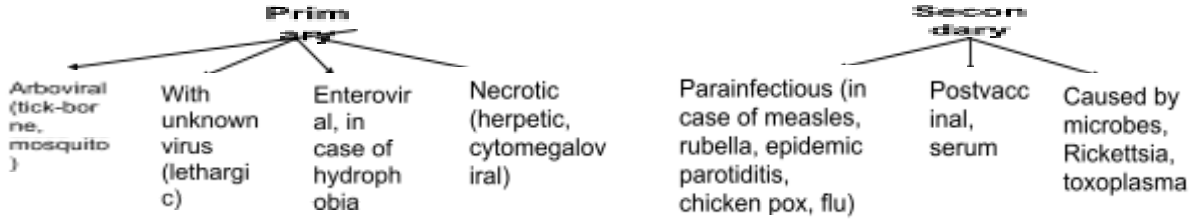
Treatme

Antibiotics.Glucocorticoids. Desintoxication therapy, symptomatic therapy. Decubituses prophylaxis.

Encephalitis

Figure2

By clinical course acute, subacute, chronic, progressive-remittent
By clinical picture typical forms, asymptomatic, abortive, fulminant



Clinical manifestations of encephalitis

General infectious diseases symptoms:
high temperature, inflammatory changes in blood, catarrhal phenomenon of upper airways, gastrointestinal tract

Tick-borne	Epidemic	Herpetic
neurotropic arbovirus	Unknown neurotropic virus	In adult patients - virus of herpex simplex of type 1, in babies - virus of herpes simplex of type 2
	respiratory	Reactivation of persistent infection in adults, by genital channel of infection from mother to a child during labor
Inflammatory process in arachnoid membranes, in anterior horns of cervical part of spinal cord, nuclei of medulla oblongata	In acute stage-inflammation in hypothalamus, basal nuclei, grey matter of sylvian aqueduct, nuclei of oculomotor nerves; in chronical-degenerative process in substantia nigra and globus pallidus	Hemorrhagic necrosis of medial part of temporal lobes and inferior part of frontal lobes

Clinical picture

Acute stage *First period of fever:* Weakness, headache, pain in muscles, meningeal syndrome; *Second period of fever:* Peripheral paresises of muscles of arms, neck, bulbar syndrome ***Stage of recovery period of residual effects*** (persistent athrofic paresises, Kojewnikoff's epilepsy)	***Acute stage*** Rise of body temperature, pathologic sleepiness, oculomotor lesions, vegetative, vestibular, mental disorders ***Chronic stage*** Parkinsonian syndrome	Rise of body temperature, headache, vomiting, impairment of consciousness, meningeal signs, herpetic rash on the face, smelling and taste hallucinations, anosmia, hemiparesises, aphasia, epileptic seizures, orientation disorders, inadequate behaviour

Diagnostics

Serological reactions and biological experiment on laboratory animals	There aren't any methods of specific diagnostics	Swelling, areas of diminished density in frontal and temporal lobes and tomograms of brain; rise of titer of specific antiviral antibodies in second blood and liquor samples

Treatment

Immunoglobulin, placental gamma globulin, prednisolon , ribonucleasa, symptomatic treatment	Antivirus - in acute stage, antiparkinsonian remedies – in chronic stage	Aciclovir , desintoxication, dehydration therapy, symptomatic treatment

Figure 3

Acute anterior poliomyelitis

Etiology

Way of infection

By respiratory and alimentary ways from healthy and ill carriers

Forms

Asymptomatic (virus carriers), abortive, nonparalytic (meningeal, meningoradicular), paralytic

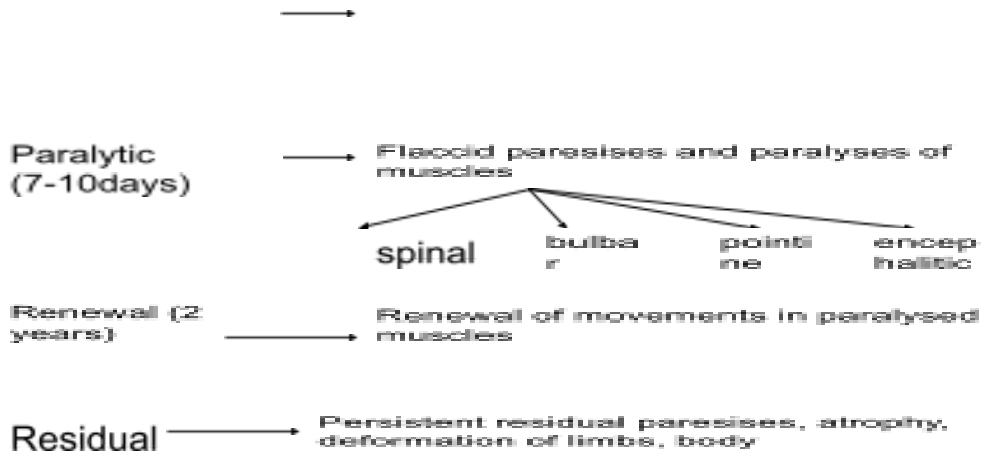
Clinical picture of paralityc poliomyelitis

Stages

Incubation period (10–14 days)

Prodromal (1–3days) → fever, inflammation of palate, gastrointestinal disorders

Preparalytic (1–3days) → After latent period (2-3days) high temperature, sleepiness, meningoradicular symptoms, spasms, pains, changes of muscular tonus



Presence of a virus in rhinopharyngeal exudete and faeces; detection of type specific antibodies in blood serum

Isolation of a patient for 6 days. Children, that contacted with the patient, are given injections of gama globulin vaccination of children - according to the plan of inoculations

Symptomatic. Antibiotics for prophylaxis of pneumonia. Physiotherapeutic procedures during renewal period, sanatorium-and-spa treatment, surgical treatment during residual period.

V. Oral questions:

- Give definition of encephalitis.
- What is the classification of encephalitis?
- On the basis of what data do you diagnose tick-borne encephalitis?
- On the basis of what data do you diagnose acute or chronic stages of lethargic encephalitis?
- Indicate clinical peculiarities of herpetic encephalitis.
- Describe clinical picture of myelitis.
- Indicate clinical peculiarities of paralytic and nonparalytic poliomyelitis.

Tests and typical tasks of II level

№	Typical tasks of II level	Standard of answer
1.	A patient, who works a s a lumber-man, aged 35, at the end of May had chill, high body temperature, headache. On the 6-th day he also had hiccough, weakness of arms, his head fell on the chest. In neurologic status detected paresis of arms with atony of muscles and areflexion are detected. The head is drooping. What is the provisional diagnosis? What is the form of disease?	Tick-borne encephalitis. Poliomyelitic form.
2.	A patient with high body temperature, pathologic sleepiness, has divergent strabismus, sebaceous face. What is the provisional diagnosis?	Accute stage of lethargic encephalitis.
3.	On the background of a temperature rise up to 38º, general weakness a patient has feelings of asleep feet, retention of urine. After two days	Lesion of diameter of spinal cord in thoracic

	active movements in legs, anesthesia of all kinds of sensitivity downward from navel appeared. What is topical and clinical diagnosis?	part of spinal cord. Acute myelitis.

№	Tests of II level	Standard of answer
1.	Indicate main clinical differences between encephalitis and meningitis: a) presence of meningeal syndrome b) loss of consciousness c)presence of vain cerebral symptoms d) presence of focal neurological symptoms	d)
2.	Localisation of pathological process in case of poliomyelitis: a) basal nuclei; b) lateral funiculi of spinal cord c) motor nuclei of cranial nerves d) anterior horns e) posterior funiculi of spinal cord.	c); d)
3.	Indicate signs of myelitis: a) Paresises, muscular paralysis b) lesion of sensivity by conductive type c) bulbar disorders d) pelvic disorders e) alternating syndromes.	a); b); d)

2. Methodic resources for the main stage of the lecture

Professional algorythm of mastering methods of examination patients with infectious lesions of brain and spinal cord

№	Task	Guidelines	Notes
1	2	3	4
1. 2.	To master methodology of examination of patients with infectious lesions of brain and spinal cord To carry out curation of a patient with infectious diseases of brain or spinal cord	To carry out examination in the following order: 1) complaints of a patient; 2) obtaining of medical history; 3) detecting of general symptoms of the infectious disease; 4) detecting of meningeal symptoms; 5) examination of function of cranial nerves; 6) examination of reflectory-motor function; 7) investigation of coordination of movements and functions of extrapyramidal system 8) detecting of sensitive disorders 9) investigation of higher cortical functions 10) analysis of data of additional methods of investigation	Pay attention if a patient has general infectious symtoms,meningeal signs, oculomotor and bulbar disorders, parkinsonian syndrome

1	2	3	4

3.	To determine localization of pathological process. To carry out differential diagnostics. To give clinical diagnosis, determine forms and stage of disease. Evaluate prognosis for a disease. To make treatment regimen.	Group detected symptoms. Use structurologic schemes of the lecture.	Pay attention to the dependence of therapy methods on form and stage of the disease.

3. Control material for the final stage of the lecture

Atypical tasks of III level

№	Atypical tasks of III level	Standard of answer
1.	A patient, aged 32, has gradually had tremor, slowness of movements, monotonous quiet speech, masklike face, hypersalivation. The gait is shuffling with small steps. A "bending" position. Two years ago had a disease with high temperature, diplopia, sleepiness (as the patient characterizes it "a flu"). What syndrome is observed in a patient? Give clinical and topical diagnosis. What treatment can be prescribed?	Parkinsonian syndrome. Lesion of palidonegral system of brain. Chronic stage of encephalitis. Antiparkinsonian remedies.
2.	A child, aged 10, on the background of temperature rise, that lasted 2 days, had vomiting and diarrhoea. After 4 days the patient had weakness of muscles of proximal part of legs with aleflexy, low muscular tonus and bilateral peripheral paresis of mimic muscles. Indicate localisation of pathological process. What is clinical diagnosis? What disease must differential diagnostics be carried out with?	Mononeurons of anterior horns of spinal cord on the level of lumbar intumescence, motor nuclei of facial nerve in pont. Paralytic form of acute poliomyelitis. With polyradiculoneuropathy of Guillain-Barre.

4. Materials for methodic provision of students' self-preparation

Approximate chart of independent work with literature on the subject "Encephalitis. Myelitis. Acute poliomyelitis"

Main tasks	Guidelines
To learn: 1) classification, etiopathogenesis, epidemiology, clinical picture, diagnostics, methods of treatment of encephalitis	To draw up a table with classification of encephalitis. While studying primary encephalitis, to learn more details about tick-borne, lethargic, herpetic encephalitis.
2) etiopathogenesis, clinical picture, diagnostics, principles of treatment of myelitis	To draw up a table of clinical manifestations of myelitis of different localisation.
3) etiopathogenesis, clinical forms, diagnostics, prophylaxis and treatment of acute poliomyelitis	To draw up a table of clinical manifestations of acute poliomyelitis.

MULTIPLE SCLEROSIS. ACUTE DISSEMINATED ENCEPHALOMYELITIS. AMYOTROPHIC LATERAL SCLEROSIS

I. Why do we study it?

Demyelinating diseases are very spread among able-bodied population and often lead to disabling of young people. Amyotrophic lateral sclerosis leads to the progressive degeneration of motor neuron and is accompanied by deep paralyses and lethal outcome. Treatment of such diseases is effective on early stages of the disease course, that's why early diagnostics and timely therapy are especially important. Ophthalmologists, pediatricians, urologists, neurosurgeons can face the early symptoms of multiple sclerosis - and timeliness of diagnostics and qualified help, given to patients will depend on their knowledge.

II. Study goals:

To know:

1) Contemporary views on etiology and pathogenesis of multiple sclerosis (MS), acute disseminated encephalomyelitis(ADEM), amyotrophic lateral sclerosis (ALS) (a=II);
2) Clinical manifestations and course of these diseases (a=II);
3) Methods of diagnostics and treatment of MS, ADEM, ALS (a=II).

To be able:

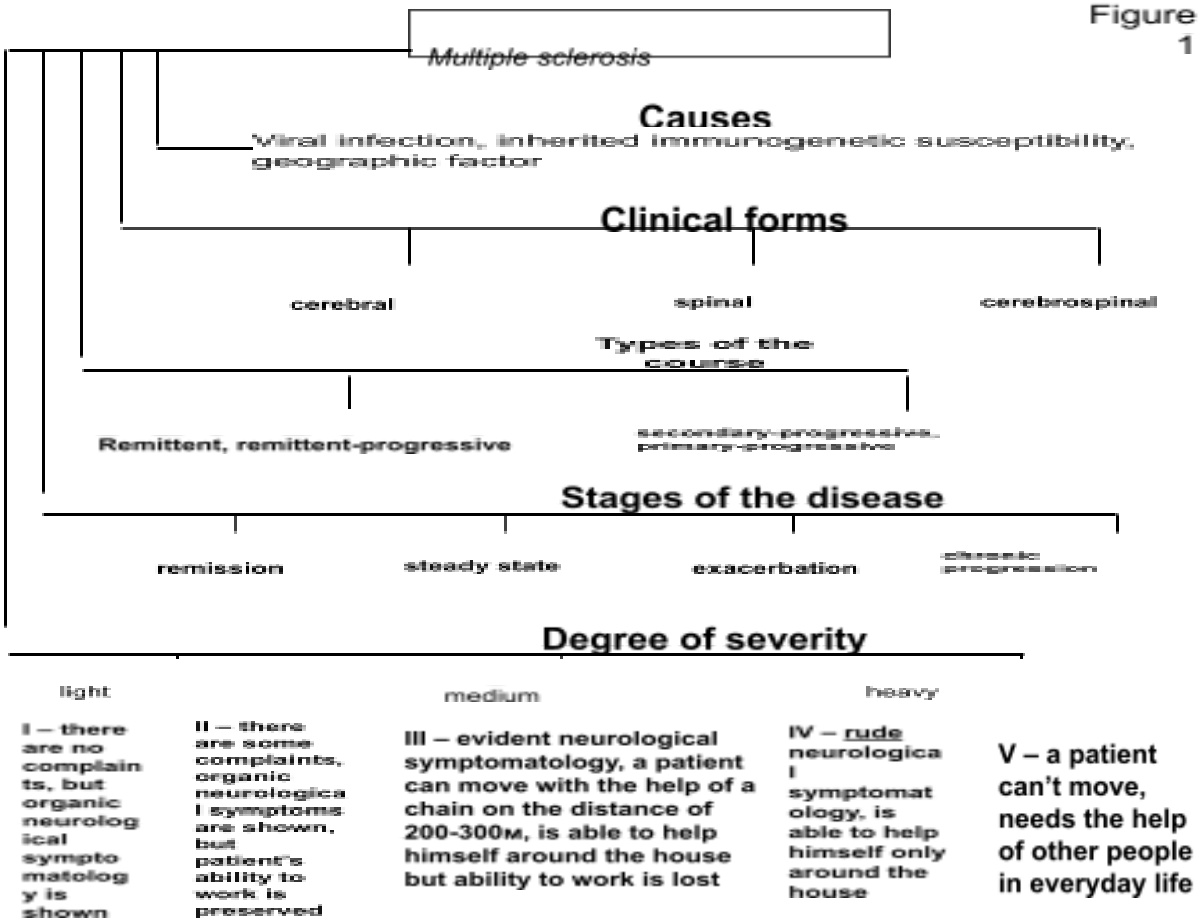
1) To examine patients with MS, ADEM, ALS (a=III);
2) To give topical diagnosis on the basis of the detected symptoms (a=III);
3) To analyse data of the additional investigation methods, to carry out differential diagnostics and give clinical diagnosis (a=III);
4) To prescribe treatment, necessary in case of these diseases (a=III).

III. Educational goals:

1. To develop responsibility of the future doctor for the life of a patient, timely hospitalization and qualified neurological help.
2. To develop humane attitude to patients with demyelinating diseases and ALS..

IV. Contents of the lesson

Figure 1



Treatment

Beta-interferons (Rebif, betaferon), copaxon, immunoglobulin, amixin, flogenzim, corticosteroids, nootropics, antiaggregants, solcoseryl, erbisol, lecithin and others. (Therapy must be differentiated depending on the stage, clinical form, course of the disease, immunal status of a patient. You can find medical regimen for patients with MS in the manual of S.M. Vinnychuk, O.A.Myalovitska. Multiple sclerosis. – Kiev, 2001. – 55 p.)

Figure 2

Typical clinical symptoms of MS

Motor lesions	**Central hemi-, para-, tetraparesises**
Pelvic lesions	Imperative feelings of urination, periodic anuresises, constipations
Cerebellar lesions	**Manifestations of static and dynamic ataxias**
Sensory lesions	**Paresthesias, reduction of vibratory and muscular-articular sensation**
Lesion of cranial nerves	**– optic nerve** **– facial nerve**
Neuropsychological disorders	– euphoria – depressive syndrome – impairment of memory, attention, intelligence

Figure 3

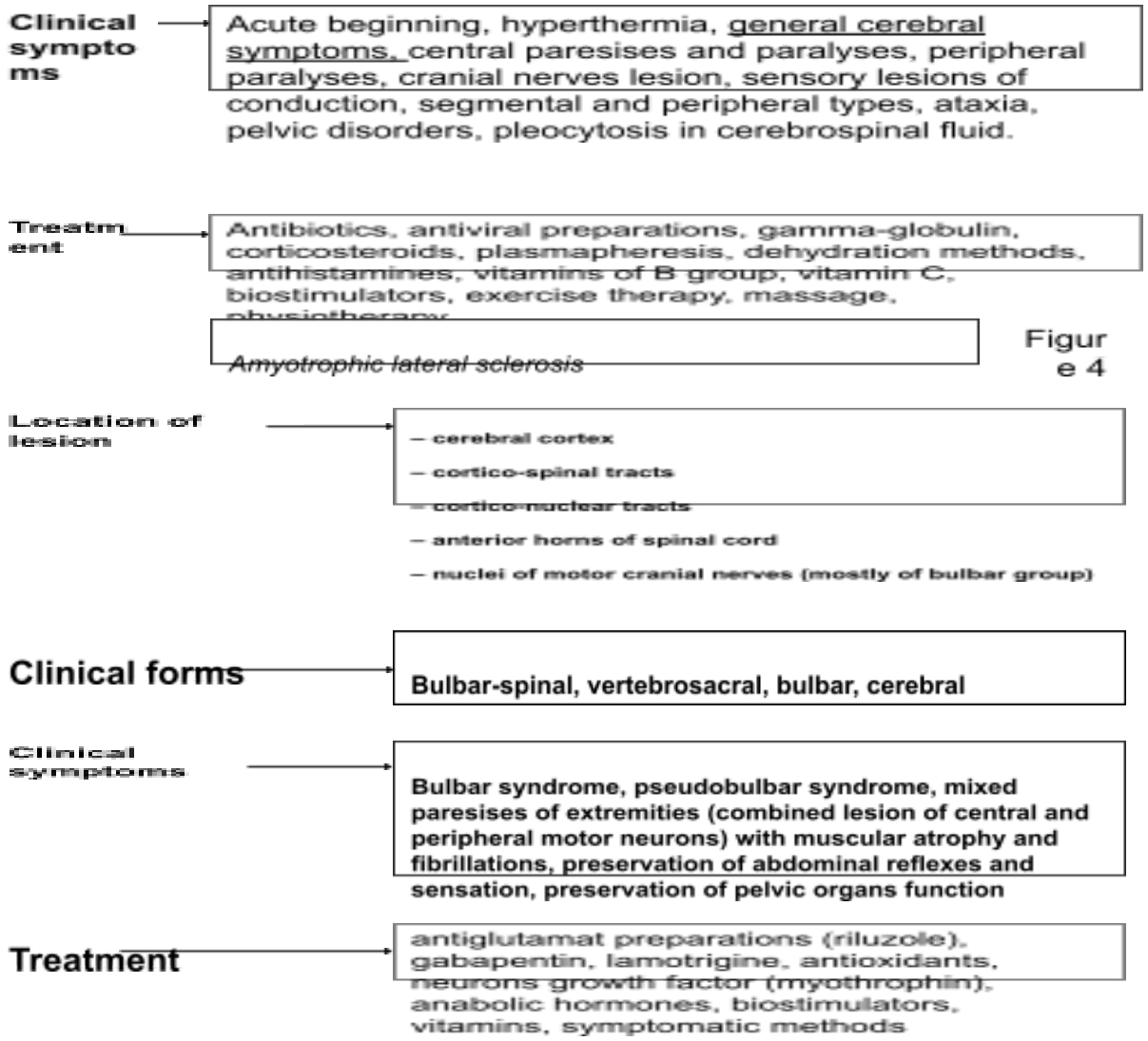
Acute disseminated encephalomyelitis

Location of the lesion

- **– arachnoid membranes**
- **– big cerebral hemispheres**
- **– subcortical nuclei**
- **– brain column (conduction tracts and nuclei)**
- **– spinal cord**
- – nerves and roots

Clinical forms

- **– encephalomyelopolyradiculoneuritis**
- **– myeloneuritis**
- **– polioencephalomyelitis**
- **– transverse myelitis**
- – disseminated myelitis
- – Kussmaul Landry (acute ascending) paralysis



V. Oral questions:

- What are the causal factors of MS?
- What immunity changes take place in case of MS in exacerbation and remission stages?
- What nervous structures are mostly often affected in patients with MS?
- Enummerate clinical forms of MS.
- What are the degrees of severity of MS?
- What are signs of Charco's triad, Marburg's pentalogy?
- What is typical in clinics of acute disseminated encephalomyelitis?
- Enummerate structures that are affected in case of ALS.
- What are clinical forms of ALS?
- Indicate preparations that are used in treatment of ALS.
- What are principles of treatment of patients with MS?

Tests and typical tasks of II level

№	Типові задачі II рівня	Standard of answer

1.	A patient has lower spastic paresis, ventricular reflexes and vibratory sensation are absent, there is periodic enuresis. Where is the nidus of the lesion? What disease are such symptoms typical for?	In superthoracic part of spinal cord. Pyramidal tracts and posterior funiculi on both sides are affected – what is typical for MS.
2.	Against a background of catarrh of upper respiratory tracts and high temperature, there was acute appearance of vomiting, meningeal signs, paresises of the extremities, bulbar disorders. What disease can be suspected?	Acute disseminated encephalomyelitis.
3.	During examination of a patient there was detected mixed upper paraparesis of arms with the atrophy of muscles of arms and shoulder girdle, increased reflexes of hands, fibrillary twitches in muscles. What structures were affected? What disease can be suspected?	Pyramidal tracts on the both sides and motorneurons of anterior horns of spinal cord are affected. ALS.

№	Tests of II level	Standard of answer
1	Indicate the most typical early signs of MS: a) olfactory hallucinations b) decrease in hearing c) reduction of vibratory sensation d) inferior paraplegia e) trophic disturbances f) congestive disks of optic nerves g) absence of ventricular reflexes h) transient visual impairments i) bulbar disturbances j) transient paresthesias	c); g); h); j)
2	Name clinical manifestations of ADEM: a) acute development b) general cerebellar and tunicary symptoms c) progressive course d) focal symptoms of lesion of brain and spinal cord	a); b); d)
3	What nervous formations are affected in case of ALS: a) peripheral nerves b) pyramidal tracts c) anterior horns of spinal cord d) sensory tracts e) motor nuclei of IX, X, XII pairs of cranial nerves	b); c); e)

2. Materials of the methodic provision of the main stage of the lecture.

Professional algorythm of developing skills and abilities of examination of patients with multiple sclerosis, acute disseminated encephalomyelitis and amyotrophic lateral sclerosis.

№	Task	Guidelines	Notes

1.	To master methodology of examination of patients with MS,ADEM, ALS To examine patients with MS, ADEM, ALS.	To carry out the examination in the following order: 1) patient's complaints 2) obtaining the case history; 3) detecting general symptoms of the infectious disease; 4) detecting meningeal symptoms; 5) investigation of the function of cranial nerves; 6) investigation of reflectory-motor function; 7) investigation of coordination of movements and functions of extrapyramidal system; 8) detection of sensory disorders; 9) examination of upper cortical functions; 10)analysis of the data of additional methods of examination.	MS is suspected in a patient. While obtaining the case history, define type of the course of the disease, pay attention to presence of central paresises, coordination of movements, vibratory sensation, function of pelvic organs, state of eye-ground. In case of suspicion of ADEM, concentrate on detecting meningeal signs, peripheral paresises, changes of cranial innervation. If ALS is present, concentrate your attention on detecting of fibrillary twitches, combination of symptoms of central and peripheral paresises, bulbar and pseudobulbar disorders, preservation of sensation.
2.	To give accurate topical and clinical diagnosis, to outline plan of the treatment.	Group the detected symptoms in syndromes, indicate location of the process. Analyse complaints, data of the case history, take into consideration data of additional methods of examination – give clinical diagnosis. Make a medical regimen.	Define the number of lesion nidi in examined patients and their location.

3. Control materials for the final stage of the lecture

Atypical tasks of III level

№	Atypical tasks of III level	Standard of answer
1.	A patient of 26 years has decreased sight on the right eye. She had effective treatment of retrobulbar neuritis of eye nerve. A year later she started suffering from diplopia, weakness in legs, staggering gait, difficult urination. The patient doesn't lead right eyeball outwards, has horizontal nistagmus, scanning speech, central tetraparesis with muscular hypertension, hyperreflexia, pathologic Babinski's sign on the both sides, megalographia, intentional tremor and missing the mark with coordination tests, reduction of vibratory sensation in the extremities. There is white atrophy of disks of eye nerves on the eye-ground. Ground your topical diagnosis. Give clinical diagnosis.	Pyramidal tracts, cerebellum and its tracts, optic, abducent nerves, posterior funiculi of spinal cord are affected. MS, cerebrospinal form, remitting clinical course.
2.	A child of 14 against the background of fever and high temperature (up to 38ºC) on the third day had a headache, psychmotor agitation. On the fifth day the patient had weakness in legs and arms, dysphagia, urinary retention. There was detected strabimus, moderate ptosis, tetraparesis with low muscular tonus, painfulness of peripheral nerve columns, distal hyperstesia of "mittens" and "socks" type, moderate meningeal signs. What is clinical diagnosis? What additional methods of examination must be carried out?	AME. MRI of brain, oculist's advice (eye-ground), examination of cerebrospinal fluid.

3.	A patient of 42 two years ago noticed twitches of muscles of arms. A year later his muscles grew thinner and he had weakness in the right and then in the left arms. The patient had dysphagia, especially of fluid food. The speech became not clear and scrambled. Movements of tongue are limited, there are fibrillary twitches of muscles. Swallowing reflex and reflex from soft palate are decreased. Tetraparesis with atonia and atrophy of muscles of shoulder-girdle and thorax. Reflexes from arms and legs are high, ventricular reflexes are preserved, pathologic Babinski's sign, Rossolimo's reflex on the both sides. Sensation is not affected. Ground topical diagnosis, give clinical diagnosis.	Lesion of motor nuclei of glossopharyngeal, vagus, sublingual nerves, anterior horns of lower cervical vertebral and upper pectoral segments of spinal cord, bilateral lesion of pyramidal tracts. ALS.

4. Materials of the methodic provision of students' self-preparation.

Approximate chart of the independent work with literature on the topic "Multiple sclerosis, acute disseminated encephalomyelitis, amiotrophic lateral sclerosis"

Main task	Guidelines
To revise: 1) structure of central and peripheral parts of nervous system	Using nervous system atlases, to make and draw a figure of structure of central and peripheral parts of nervous system
2) symptoms of lesion of structures of central and peripheral parts of nervous system	To revise semiotics of lesion of structures of central and peripheral nervous system, principles of examination of neuralgic patients
To learn: Etiology, pathogenesis, classification, diagnostics, differential diagnostics, methods of treatment of MS, ADEM, ALS	To write down in copy-book classification of MS, ADEM, ALS, especially their clinical picture, diagnostics, treatment

The diseases of the peripheral nervous system.
The lesions of the spinal nerves, neuropathies and neuralgias of the cranial nerves. Polyneuropathies

I. Why do we study it?

This topic is a very important part of neurology. The diseases of the peripheral nervous system (PNS) among the adult population take 50 % of all diseases, and take the first place by their spread. They also take one of the first places among the diseases with temporary loss of fitting for work. The doctors of any speciality will meet such patients in their practice. That's why it is necessary to diagnose and differentiate the diseases of the peripheral nervous system in time and in case of necessity give such patients the first aid.

II. Study goals:

To know:

1) the classification of the PNS diseases (a =II);
2) the definition of the neuropathy, neuritis, neuralgia, polyneuropathy, polyneuritis (a =II);
3) the etiology, pathogenesis, clinical symptoms of spinal and cranial nerves lesions (a =II);
4) the signs of trigeminal and glossopharyngeal neuralgia(a =II);
5) the etiology, pathogenesis and clinical symptoms of polyneuropathies (a =II);
6) the methods of diagnosis and treatment of the neuropathies, neuralgias, polyneuropathies (a =II).

To be able to do:

1) to examine the patients with neuropathy, neuralgia, polyneuropathy (a =III);
2) to diagnose neuralgias, neuropathies and polyneuropathies (a =III);

3) to determine the plan of examination and treatment of the patients with neuropathies, neuralgias, polyneuropathies and give the first aid to such patients (a =III).

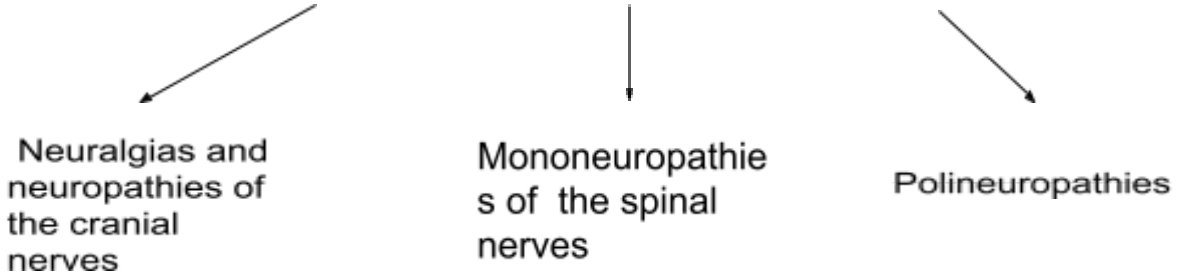
III. Educational goals:

To train future doctors to feel responsibility and humanity, medical ethics and deontology issues during examination of patients with diseases of the peripheral nervous system.

IV. Contents of the lesson

Scheme 1

The diseases with the peripheral nerves lesion



Scheme 2

Neuralgias and neuropathies of the cranial nerves

	Trigeminal neuralgia	***Neuropathy of the facial nerve***
Ethiology	primary (idiopathic) secondary (symptomatic) – odontogenic, sinusogenic, in case of general infections, intoxications, traumata	idiopathic (Bell's palsy), secondary – local overcooling associated with neuroviral and general infections (influenza, rheumatism, parotitis), otitis, delivery trauma, fractures of the cranial basis.

Clinical signs	Attacks of sharp pains localized in the area of innervation; reflex spasm of facial and chewing muscles; presence of “trigger zones”; rhinorhoea; hypersalivation; hyperemia or paleness of the skin during the attack; absence of pain and other symptoms in the period between the attacks	Peripheral paresis (paralysis) of the mimic muscles; dryness of the eye or epiphora; decreasing (absence) of the corneal, supraorbital and conjunctival reflexes sometimes in addition with hyperacusia, taste disturbance in the front (anterior) 2/3 of the tongue

Scheme 3

Mononeuropathies of the spinal nerves

	Etiology	**Clinical signs**
Nerve radial	Fracture of the humerus, compression of the nerve during the operation, sleeping,; intoxications	Paresis of the hand extensors, fingers, forearm, hand, that hangs; anesthesia of innervation, loss of the extensor ulnar reflex
Ulnar	fracture of humerus, condylus and epicondylus; traumatization of the cubital channel; intoxications	paresis of the hand flexors, IV and V fingers; “claw” hand; anesthesia of all senses in the area of innervation
Median	traumatization in the corpus channel; intoxications, traumata	paresis of the hand flexors, I, II, III fingers; “monkey’s ” hand, anesthesia in the area of innervation, rough secretory and vasomotor disturbances, decreasing of the metacarporadial reflexes.
Ischial	fracture of the femur; trauma (including in case of injections)	Paralysis of the foot and toes; absence of the Achilles reflex; anesthesia in the area of innervation; Laseg’s sign; vegetative and trophic disturbances
Femoral	fracture of the femur; inflammatory pelvic conditions; diabetes mellitus	paralysis of the ankle extensors; absence of the knee reflex; anesthesia in the area of innervation; Wasserman’s sign

Fibular	trauma of the ankle, strangulation in the popliteal fossa	paresis of the foot and toes extensors; foot, that is hanging; stepasis, anesthesia in the area of innervation
Tibial	traumata of the ankle; compression in the tarsal channel	Paresis of the foot and toes flexors; absence of the Achilles reflex; anesthesia in the area of innervation; vegetative and trophic disturbances

Scheme 4

Polyneuropathies

Etiology:

1) infections and allergic

in case of many general viral infections (measles, influenza, rubella, mononucleosis), postdiphtheric, vaccinal, acute and chronic demielinization polyneuropathies

2) exogenic toxic

alcoholic, plumbum, medicative, arsenic, chlorephosphate

3) endogenic, toxic

metabolic diabetic

4) vascular

in case of collagenosis, obliterating diseases of the vessels

5) inheritable

neural amyotrophy of Sharko-Mary-Tuts.

Clinical signs:

Peripheral pareses of paralyses of the distal parts of the limbs; anesthesia (hyperesthesia) of the "socks" and "mittens" type, pains in the hands and feet, trophic disturbances in the distal parts of the limbs (sometimes combining with cranial nerves lesions)

V. Oral questions:

- Name nervous structures that form peripheral nervous system.
- Give the definition of the neuralgia, neuropathy and polyneuropathy.
- What is the difference between neuritis and neuropathy?
- What is the modern classification of the peripheral nervous system diseases?

- Name the symptoms that appear in case of peripheral nerve lesion.
- Name the symptoms that are characteristic for trigeminal neuralgia.
- Name the main symptoms of polyneuropathies.
- Describe the main clinical symptoms of the facial neuropathy, neuropathies in the upper and lower limbs.
- What are the signs of glossopharyngeal neuralgia?
- Name the peculiarities of the diabetic, alcoholic and postdiphtheric polyneuropathies.

Tests and typical tasks of level II

№	Tests of level II	Answers
1	Name the symptoms that are characteristic for femoral neuropathy: a) Laseg's sign b) absence of the plantar reflex c) absence of the knee reflex d) paresis of the m. quadriceps femoris and m. sartorius e) paralysis of the m. gastrocnemius f) Wasserman's and Matskevich's signs	c), d), f)
2	Name the clinical manifestations of the facial neuropathy a) peripheral paresis of the mimic muscles b) central paresis of the mimic muscles c) lagophthalm d) enophthalm e) diplopia f) lacrimation	a), c), f)

	Typical tasks of level II	Answers
1	A patient developed the weakness of muscles-extensors of the right hand and fingers after the shoulder trauma, the hand hangs. Determine the pathology.	Traumatic neuropathy of the right radial nerve
2	A patient developed attacks of sharp pain of short duration in the left half of the upper lip, upper jaw after overcooling, that spread over all half of the face. What is the name of such disturbance?	Neuralgia of the II branch of the left trigeminal nerve

Professional algorithm to form abilities and skills of examination of the patient with spinal and cranial nerves lesion

№	Tasks	Instructions	Notes
1.	To master the methods of patient's examination with spinal and cranial nerves lesion Examine the patients with cranial and spinal nerves lesion	Fulfill the examination in the following consequence: 1) Take the complaints, anamnesis vital and anamnesis disease 2) Check up the neurological status of the patient, defining the	Specify the presence of accompanying diseases, possible exogenous intoxications, provoking factors. Analyze the character of the pain (constant, attacking, darting, dull, etc.) Pay attention to the presence of the peripheral muscle pareses, disturbance

		pathology of cranial or /and spinal nerves	of all kinds of sensitivity by the peripheral type (mono- or polyneuritic), vegetative, vessel and trophic disorders.
2.	Basing on the defined pathological symptoms determine the topic diagnosis. Define the plan of treatment of the patients	Group the defined signs of lesion. Use the schemes of the lesson to determine topical and clinical diagnosis	Analyze the findings of the additional methods of examination. In case of their absence, define the plan of necessary additional examinations, prove their necessity

VI. The materials for self-education of the students

Approximate scheme for self-education on the topic "The diseases of the peripheral nervous system. The lesions of the spinal nerves, neuropathies and neuralgias of the cranial nerves. Polyneuropathies"

Main tasks	Instructions
To learn: 1) modern classification of diseases of the peripheral nervous system	To write down in a notebook sections of this classification
2) etiology, pathogenesis and leading clinical symptoms of neuralgias, neurology, polyneuropathies	To write down in the notebook the sign of polyneuritic syndrome, feature of displays of different polyneuropathies, typical signs of neuropathies of cranial and spinal nerves, and

	glossopharyngeal tics douloureuxes, principles of treatment of patients with neuralgias, neuropathies, polyneuropathies
3) additional methods of research, which are used in the case of affections of peripheral nerves	
4) methods of treatment of neuralgias, neuropathies, polyneuropathies	

Vertebrogenic lesions of the peripheral nervous system. Nonvertebrogenic lesions of the nervous roots, intervertebral nodes, plexuses

I. Why do we study it?

The problem of the diseases of the spinal column always attracts attention of the practical doctors. Vertebroneurological lesions are the most prevalent chronic human diseases. The frequency of the intense pain in the spinal column, that disturbs everyday life, work and makes people to address themselves to the medical help, takes 80% in all countries of the world. The problem of nonvertebrogenic (infections, allergic, traumatic) lesions of the peripheral nervous system is also actual. General practitioner must distinguish these diseases in time that is one of the main factor of the patient's recovery.

II. Study goals:

To know:

1) classification and mechanism of the development of the vertebrogenic reflex and compressive syndromes (a =II);
2) clinical picture of the cervical vertebrogenic syndromes (a =II);
3) clinical signs of the thoracic vertebrogenic syndromes (a =II);
4) clinical manifestations of the lumbosacral vertebrogenic reflex and compressive syndromes (a =II);
5) methods of diagnostics and treatment of the vertebrogenic syndromes (a =II);
6) etiopathogenesis, clinical symptoms, diagnostics and treatment of acute Guillain-Barre's polyradiculoneuropathy (a =II);
7) etiology, pathogenesis, clinical symptoms, diagnostics and treatment of the herpetic ganglionitis (a =II);
8) etiology, pathogenesis, clinical signs, methods of treatment of the brachial and lumbosacral plexitis (a =II).

To be able to do:

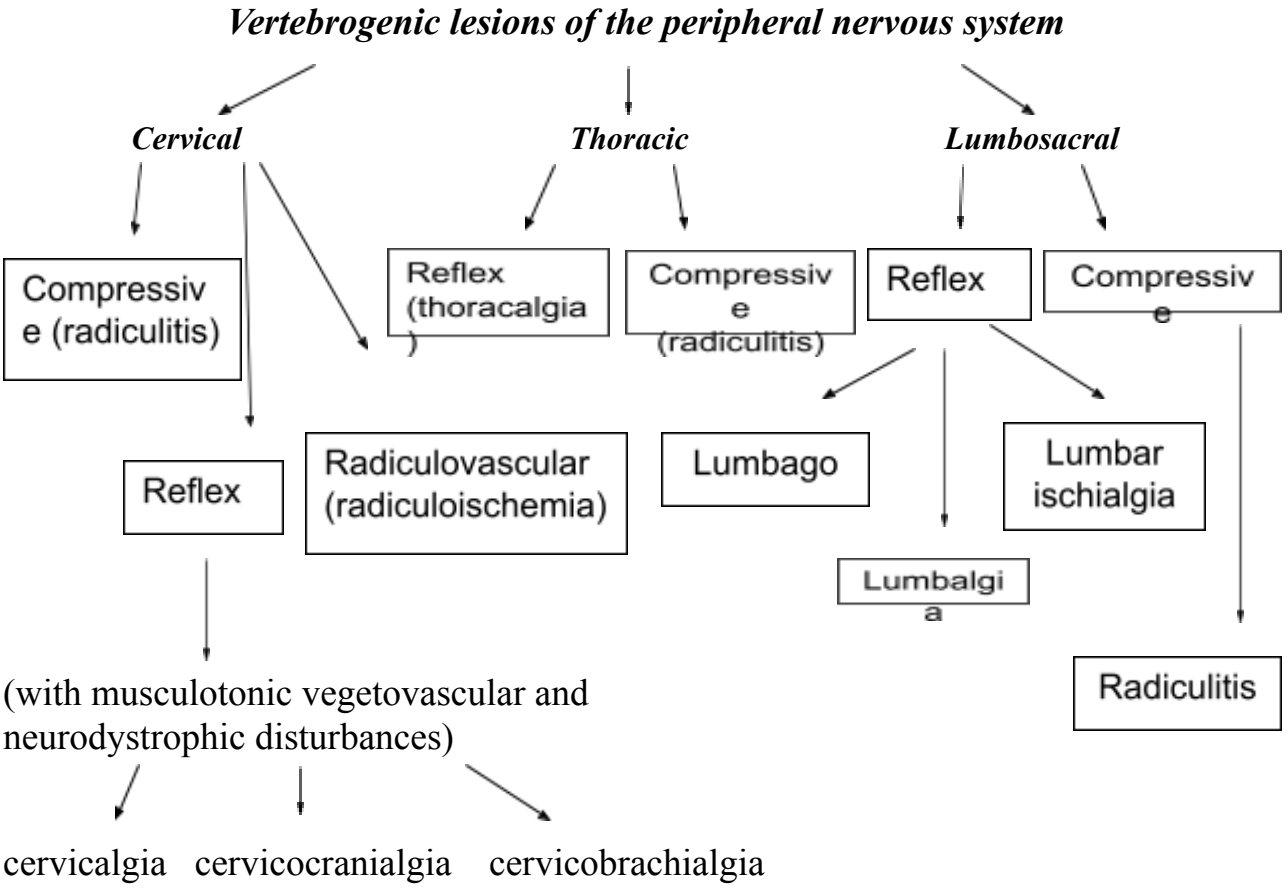
1) to examine patients with vertebrogenic syndromes and nonvertebrogenic lesions of nervous roots, intervertebral nodes and plexuses (a =III);
2) to diagnose vertebrogenic syndromes and nonvertebrogenic lesions of roots, intervertebral nodes and plexuses; to define the plan of treatment (a =III).

III. Educational goals:

To train future doctors to feel responsibility and humanity, medical ethics and deontology issues during examination of patients with diseases of the peripheral nervous system.

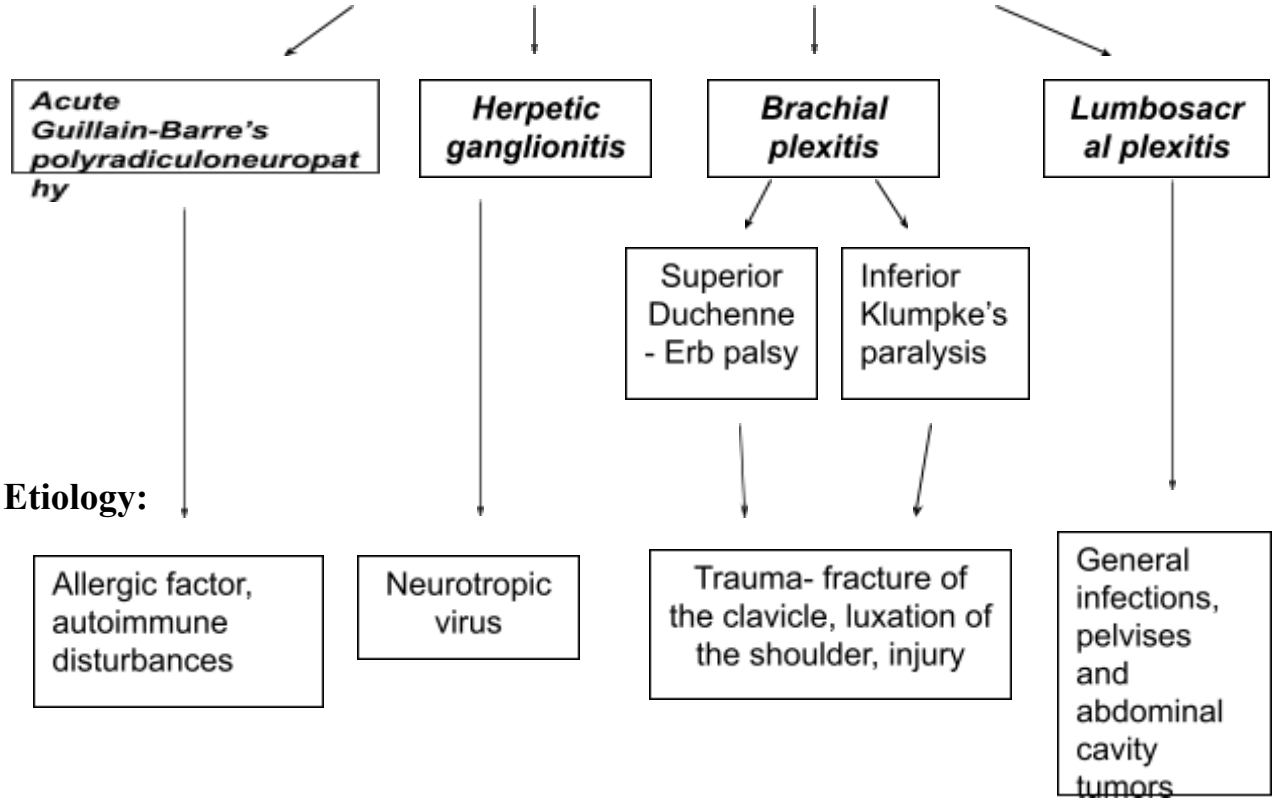
IV. Contents of the lesson

Scheme 1



Scheme 2

Nonvertebrogenic lesions of the peripheral nervous system (roots, intervertebral nodes, plexuses)



V. Oral questions:

- What is the modern classification of the vertebrogenic lesions of the peripheral nervous system?
- What is the difference between reflex and radicular syndromes?
- Name the reflex syndromes, that appear in case of the lesion of the cervical part of spinal cord.
- Name the reflex syndromes, that appear in patient with lesion of the thoracic and lumbosacral part of spinal cord.
- Name the vertebrogenic compressive syndromes and describe their clinical manifestations.
- What are the clinical manifestations of the acute Guillain-Barre's polyradiculoneuropathy?
- Describe the main clinical symptoms of herpes zoster.

- What are the characteristic symptoms of the superior brachial plexitis?
- What are the clinical manifestations of the lumbosacral plexitis?
- What are the characteristic symptoms of the inferior brachial plexitis?

Tests and typical tasks of level II

№	Tests of level II	Answers
1	Name the syndromes that appear in case of cervical osteochondrosis a) lumbalgia b) thoracalgia c)cervicalgia d) cervicocranialgia e) meningeat f) radicular compression	c), d), f)
2	Name the therapeutic agents that are used in case of vertebrogenic radiculitis. a) sulfanamides b)dehydrative drugs c) analgetics d) orthopedic decompression e) antibiotics f) detoxic drugs	b), c), d)

№	Typical tasks of level II	Answers
1	A patient after his shoulder trauma has muscle weakness in the distal part of the left hand,	Interior left brachial Klumpke's plexitis

	hypotrophy of the left hand muscles, pain in the hand. Define the pathology	
2	A patient after overcooling has a headache and vesicular rash in the skin of the right part of the forehead. What is the name of such disturbance?	Acute herpetic ganglionitis of the right trigeminal nerve node.
3	A patient has an acute pain in the cervical part of spinal cord, that enhances during the head movements, muscles of the neck are tense, the head movements are limited. What pathology has appeared?	Cervicalgia

Professional algorithm to form abilities and skills of examination of the patient with vertebrogenic and nonvertebrogenic lesions of the roots, nodes and plexuses

№	Tasks	Instructions	Notes
1	To master the methods of patient's examination with vertebrogenic lesion of the peripheral nervous system and nonvertebro-genic lesions of the roots, nodes and plexuses	Perform the examinations in such consequence: 1) to take the complaints, medical and life history 2) check the neurological state of the patient, defining the symptoms of spinal roots, nodes, plexuses lesions	Determine the provoking factors that induced the disease (spinal trauma, character of the professional activity, acute respiratory infection). Pay attention to the presence of limitation of the spinal column movements, tension of the muscles, stretch symptoms, palpatory

2	To examine the patients with vertebrogenic lesions of the peripheral nervous system and nonvertebrogenic lesions of the roots, nodes and plexuses		tenderness in the projection of the roots and plexuses, vegeto-vascular, neurodystrophic manifestations. Define the disturbances of the deep reflexes, sensitivity, presence of the muscular hypotonia, atrophia
3	Basing on the defined pathological symptoms perform the topic diagnosis	Group the defined signs of the lesion of the nervous system and use the structural and logical schemes of the contents	
4	Basing on the complaints, anamnestic data, clinical findings, perform the clinical diagnosis and define the plan of treatment	Analyze the data of the additional methods of examination of the patients	

VI. The materials for self-education of the students

Approximate scheme for self-education on the topic "Vertebrogenic lesions of the peripheral nervous system. Nonvertebrogenic lesions of the nervous roots, intervertebral nodes, plexuses"

Main tasks	Instructions
To learn: 1) classification, mechanism of origin, clinical displays diagnostics and	To write in a notebook sections of this classification difference of reflex and compression syndromes

treatment of vertebrogenic affections of the peripheral nervous system	
2) etiology, pathogenesis, clinic of nonvertebrogenic affections of nervous roots, intervertebral nodes, plexuses, diagnostics, treatment	To write down in the notebook the signs of nodes, brachial and lumbosacral plexuses lesions

Closed craniocerebral injury. Spinal cord trauma

I. Why do we study it?

Craniocerebral and spinal traumas are related to the urgent states, that's why any doctor may face with them. The patient's life often depends on the qualification of the first aid and treatment.

II. Study goals:

To know:

1) classification of the closed craniocerebral injuries (CCCI) and spinal cord traumas (a =II);
2) pathogenetic mechanisms of CCCI and spinal cord trauma (a =II);
3) clinical picture of brain concussion, contusion and cerebral compression (a=II);
4) clinical picture of the spinal concussion, contusion, hematomyelia, hematorrhachis (a =II);
5) diagnostics and treatment of CCCI and spinal cord traumas (a =II);
6) complications of the CCCI and spinal cord traumas (a =II).

To be able to do:

1) to diagnose the manifestations of craniocerebral and spinal traumas in the patient (a =III);
2) to administer the necessary examination to such patients and evaluate the data of the additional methods of examination (a =III);
3) to provide the acute care to the patients with closed craniocerebral and spinal traumas (a =III);
4) to choose the right therapeutic management of the patients with different forms of closed craniocerebral and spinal traumas (a =III).

III. Educational goals:

To train future doctors to feel responsibility and humanity, medical ethics and deontology issues during examination of patients with craniocerebral and spinal traumas.

IV. Contents of the lesson

Scheme 1

Closed craniocerebral injury

Classification	***Concussion***	***Contusion***	***Compression***
		Light / Mean degree / Severe	on the background of contusion / without contusion
Clinical signs	- general cerebral symptoms - temporary neurological microsymptomatology	- general cerebral symptoms - steady focal symptoms	- primary syndrome of CCCI (brain concussion or contusion) - lucid space steady focal symptoms - period of symptoms increasing (general cerebral, focal,dislocative)

Diagnostics Craniography, ophthalmoscopy, cerebrospinal flood examination in case of subarachnoid hemorrhage suspection (in case of absence of evident liquor hypertension and dislocative symptoms), Echo-ES, CT, MRI of the brain

Treatment

Conservative →
- Rest
- Dehydration, sedative, antioxidants, vit.C, nootropic, heart drugs

Operative →
- in case of subtunicary hematoma

Scheme 2

Closed spinal cord trauma

Classification	***Concussion***	***Contusion***	***Compression***

			Hemorrhage into the substance of spinal cord (hematomyelia)	Hemorrhage under the membranes of spinal cord (hemator-rhachis)
Clinical signs	Temporary paresthesias, light pareses of the extremities, conductive disturbances of the sensitivity under the place of lesion, impairment of the peluic organs function	Steady segmental and conductive sensitive and motor disturbances, pelvic and trophic disturbances	Pain, paresthesias, bilateral dissociative disturbance of the sensitivity, segmental motor impairments	Radicular pains, paresthesias, meningeal symptoms, in case of spinal cord compression – pareses of the extremities, hypesthesia, pelvic disturbances, presence of the blood in the cerebrospinal flood
Treatment	Immobilization of the spinal column, dehydration drugs, symptomatic treatment, massage, exercise therapy, physiotherapy	Immobilization, coagulants, local hypothermia; in case of spinal cord compression by hematoma – operative intervention		

V. Oral questions:

- What is the classification of the closed craniocerebral injuries?
- What is the difference between brain concussion and contusion?
- What traumatic hematomas do you know?
- What is the clinical picture of brain compression?
- Name the late complications of CCCI.
- Name the necessary methods of examination in case of CCCI.
- What is the classification of closed spinal cord traumata?
- Describe the clinical picture of spinal cord concussion, hematomyelia.

Tests and typical tasks of level II

№	Tests of level II	Answers
1	Indicate the clinical signs of the brain concussion: a) loss of consciousness b) pareses and paralyses c) headache, vomiting d) decreasing of the corneal reflexes e) speech disorders f) apraxia	a), c), d)
2	Mark, in case of what kinds of craniocerebral injury lucid space is observed: a) subarachnoid hemorrhage b) brain concussion c) brain contusion d) extradural hematoma e) subdual hematoma	d), e)
3	Indicate the main clinical forms of the closed spinal cord trauma: a) parkinsonism b) concussion c) contusion d) hematomyelia e) urination disorders f) hematorrhachis	b), c), d), f)

№	Typical tasks of level II	Answers

1	The patient has fallen and hurt his head. After 5 min unconsciousness he didn't remember the events before and after the trauma. These are anisoreflexia of the knee reflexes, decreasing of the corneal reflexes, Marinescu's sign in the neurological state. What is the preliminary diagnosis?	Brain concussion
2	On the second day after CCCI the patient had an increase of headache, vomiting, weakening of the left extremities, mydriasis in the right side. Perform the preliminary diagnosis. What examinations are to be held to specify the diagnosis?	Submembranaceous hematoma. Craniography, examination of the eye grounds, Echo ES, MRI of the brain, consultation of neurosurgeon

	Tasks of the level III	Answers
	During the head trauma the patient fainted, when he came into consciousness, he felt a headache, nausea, numbness and weakness of the right hand. The doctor, having examined the patient, determined double Marinescu's sign, decreasing of the corneal reflexes, central paresis of the right hand. Meningeal symptoms were absent. What is the preliminary diagnosis? What additional examinations are necessary? What is the therapeutic approach in case of confirmation of the diagnosis?	Brain contusion. Craniography in two projections, inspection of the oculist, MRI of the brain, Echo –ES. Rest, bed rest, dehydration, sedative, nootropic drugs, analgetics – if needed. Later – vasoactive and vitamin drugs.

Professional algorithm to form abilities and skills of examination of the patient with craniocerebral and spinal traumas

№	Tasks	Instructions	Notes
1	To master the methods of patient's examination with CCCI and spinal cord traumata	Perform the examinations in the following consequence: 1) complaints of the patient 2) taking of the medical and life history	Specify in the patient and his relatives if the loss of consciousness took place, it's duration, if there was vomiting, pay attention to the presence of meningeal signs
	Examine the patients with closed craniocerebral injury and spinal trauma	3)determination of the meningeal signs 4)examination of the craniocerebral nerves functions 5)examination of the motor and coordinative spheres 6)examination of the sensitive function; examination of the highest cortical functions	In case of focal symptomatology detect the time of its onset after the trauma. Pay attention to the dynamics of the general cerebral, focal symptoms during the patient's staying in the inpatient department
2	Determine the topical diagnosis. Determine the clinical diagnosis, define the plan of examination,	Group the determined symptoms. Analyze the data of the additional methods of examination of the patients	

	prescribe the treatment		

Materials to control the final part of the lesson.

Non typical tasks of level III

№	Tasks	Answers
1	A patient developed convulsions, psychomotor agitation, involuntary urination due to the skull trauma. Rigidity of the occipital muscles is observed. During the lumber puncture the cerebrospinal fluid was pink. Name the pathological syndrome. What is the preliminary clinical diagnosis? What additional examinations are to be administered? What is the scheme of treatment?	Meningeal syndrome. Traumatic subarachnoid hemorrhage. Craniography, oculist inspection, Echo-ES. Be rest, dehydration therapy, coagulants, antibiotics, metabolites of the brain
2	The patient is delivered to the clinic of oral surgery after the traffic accident with upper jaw and nose fractures. The loss of consciousness and vomiting took place. In two hours the patient came into consciousness, answered the questions. In 24 hours the coma developed, Kernig's symptom, rigidity of the occipital muscles, anisoreflexia of the deep reflexes from the extremities D > S, Babinski's sign from the right side were observed. There is an edema of the disk if optic nerves in the eye grounds. What complication developed in the patient? What	Compression of the left hemisphere of the brain by submembranous hematoma. Echo-ES, MRI of the brain. Consultation of neurosurgeon to solve the problem concerning the operative treatment.

	examinations would prove it? What is the therapeutic approach?	
3	The patient, while falling from the height, hurt his back. Immediately he felt paresthesias and weakness in his legs. Decreasing of knee and Achilles reflexes, conductive hypalgesia in Th7 from both sides are observed. In two days all manifestations disappeared. What is the clinical diagnosis? What additional examination is needed? Indicate the therapeutic management.	Spinal cord concussion. Radiography of the thoracic part of spinal cord. Rest, dehydration therapy, nootropic drugs, vitamins.

VI. The materials for self-education of the students

Approximate scheme for self-education on the topic "Closed craniocerebral injury. Spinal cord trauma"

№	Main tasks	Instructions
1.	To repeat the anatomy of the liquor system, liquor changes in the case of traumatic affection of brain, sign of meningeal and hypertensive syndromes	to use structurally-logical charts from the theme of employment "Cerebrospinal liquid"
2.	To learn classification of the closed craniocerebral and spinal cord traumas	to make tables with classification in a notebook
3.	To learn pathogeny, clinical signs basic additional methods of diagnostics of the closed craniocerebral and spinal cord traumas	
4.	To know principles of treatment of CCCT, spinal traumas	

Final lecture #3

I. Why do we study it?

The lesson summarizes the important aspects of neurology study, such as: infectious-inflammatory and demyelinating diseases of nervous system, lateral amyotrophic sclerosis (LAS), diseases of the peripheral nervous system, closed craniocerebral trauma (CCCT). All these diseases are widely spread in neurological diseases clinic. Doctors of other specialties may also have a deal with these pathologies, so they are required to be able to diagnose these diseases and to render first aid to a patient.

During this lesson the knowledge and skills obtained during the previous practical trainings and lectures are generalized and systemized; also the knowledge, obtained by students in the process of their independent extra-curriculum study on cerebral abscess, parasitogenic and herpetic infections of nervous system, nervous system pathology in case of HIV infection, prion diseases, in particular Kreitsfeldt-Jacob disease, compressive-ischemic mononeuropathies, neurosis and somatoneurological syndromes, perinatal affections of nervous system and children's cerebral paralysis (CCP).

All the above mentioned determines the necessity of the final lesson conduction with such objectives.

II. Study goals:

The lesson is aimed at generalization and systematization of knowledge, skills and abilities obtained during the previous practical trainings, lectures and in the process of students' independent extra-curriculum study.

To know:

1. classification, ethiology, clinical manifestations, forms of the disease course, principles of diagnostics and treatment of infectious-inflammatory diseases of nervous system (a =II);

2. ethiopathogenesis, peculiarities of clinical manifestations and course, diagnostics, including the early one, principles of the demyelinating diseases and LAS treatment (a =II);
3. classification, ethiology, clinical manifestations, principles of diagnostics and treatment of peripheral nervous system diseases (a =II);
4. classification, ethiology, clinical manifestations, principles of diagnostics and treatment of CCCT and perinatal nervous pathologies (a =II);
5. classification, ethiology, clinical manifestations, principles of diagnostics and treatment of neurosis and somatoneurological syndromes (a =II).

To be able to do:

1. diagnose infectious-inflammatory and demyelinating diseases of nervous system, lateral amyotrophic sclerosis (LAS), diseases of the peripheral nervous system, types of CCCT, perinatal nervous pathologies, neuroses and somatoneurological syndromes (a =III);
2. make the differential diagnostics of different types of meningitis, encephalitis, acute multiple encephalomyelitis and multiple sclerosis;
3. make the differential diagnostics of neuralgias and neuropathies, reflex and radicular vertebrogenic syndromes (a =III);
4. make the differential diagnostics of cerebral concussion, contusion and constriction in case of CCCT and of CCP different types (a =III);
5. render the urgent aid to the patients with nervous system infectious diseases, closed craniocerebral and spinal traumata, and diseases of the peripheral nervous system (a =III);
6. make a plan of examination and treatment of patients with infectious, demyelinating, traumatic and functional affections of nervous system (a =III).

III. Educational goals:

1. To create the professional responsibility of future doctors for correctness and objectiveness at patients' examination, for accurateness in clinical diagnosing.
2. To develop and master the deontological skills obtained during the previous practical trainings, at examination of patients with infectious, demyelinating, traumatic and functional affections of nervous system.
3. To create the motivation for timely rendering of qualified medical care for patients with demyelinating diseases, CCCT, diseases of the peripheral nervous system and neuroses.

IV. Contents of the lesson

There can be used the structural-logical schemes of the previous lessons contents on such topics as: "Miningitis. Arachnoiditis", "Encephalitis. Myelitis. Acute polymyelitis", "Multiple sclerosis. Acute multiple encephalomyelitis. Lateral amyotrophic sclerosis", "Diseases of the peripheral nervous system. Disturbances of the spinal cord nerves, neuropathies and neuralgias of the cranial nerves. Polyneuropathy", "Vertebrogenic affections of peripheral nervous system. Nonvertebrogenic affections of nerve radices, intravertebral nodes, plexus", "Closed craniocerebral trauma. Spinal trauma". During this lesson the knowledge and skills are generalized and systemized obtained during the previous lessons. The basic aspects of ethiopathogenesis, clinical manifestations and course, differential diagnostics and treatment of patients with infectious, demyelinating diseases, with closed craniocerebral spinal traumata, diseases of the peripheral nervous system are emphasized. The knowledge, obtained by students in the process of their independent extra-curriculum study on the topics "Cerebral abscess. Parasitogenic diseases of nervous system", "Nervous system pathology in case of HIV infection. Herpetic affections of nervous system", "Prion infections. Kreitsfeldt-Jacob disease", "Compressive-ischemic mononeuropathies", "Perinatal and natal diseases of nervous

system. Children's cerebral paralysis", "Neuroses. Sleep disturbances", "Somatoneurological syndromes" are controlled, generalized and systemized.

V. Oral questions:

Nervous system infectious diseases:

- What are the types of meningitis according to the liquor character?
- What type of liquor dissociation can be observed in case of meningitis?
- What are the clinical manifestations of meningitis?
- What examination should be carried out in case of meningitis suspicion?
- What type of serous meningitis is the most frequently characterized by decreased level of glucose in liquor?
- What syndromes is encephalitis manifested?
- What focal symptoms are typical for acute stage of epidemic encephalitis?
- What symptoms are typical for chronic stage of epidemic encephalitis?
- What focal symptoms are typical for acute stage of tick-borne encephalitis?
- What symptoms are typical for chronic stage of tick-borne encephalitis?
- What syndromes is cerebral abscess manifested?
- What diseases is cerebral abscess differentiated from?
- What diseases should neurotoxoplasmosis be differentiated from?
- What criteria is diagnostics of parasitogenic nervous diseases based on?
- What types of nervous pathologies can be observed in patients with HIV infection?
- What types of nervous pathologies can be observed in case of herpetic infection?
- Name the main features of prion diseases of people and animals.
- What are the classification and clinical picture of Kreitsfeldt-Jacob disease?

Demyelinating diseases:

- What does the essence of multifactorial theory of the multiple sclerosis ethiopathogenesis consist in?
- What variations of the multiple sclerosis course do you know?
- What structures are the most frequently afflicted in case of multiple sclerosis?
- What are the early manifestations of multiple sclerosis?
- Name Charcot's triad.

Lateral amyotrophic sclerosis:

- What nerve formations are the most frequently afflicted in case of LAS?
- Name the clinical manifestations of LAS.
- What are the death causes of patients with LAS?

Diseases of the peripheral nervous system:

- Name the up-to-date classification of the peripheral nervous system diseases?
- What is the difference between the reflex vertebrogenic and radicular syndromes?
- Enumerate the reflex vertebrogenic syndromes of cervical, thoracic, lumbar regions.
- Describe the polyneurotic syndrome.
- What types of polyneuropathies are differentiated by their ethiology and pathogenesis?
- Give the definitions of compressive-ischemic syndromes.
- Name the main compressive-ischemic syndromes of arm and leg. What are their clinical signs?
- What variations of brachial plexitis are differentiated? Name the main clinical signs of them?
- Name the clinical peculiarities of trigeminal nerve neuralgia?
- Describe the clinical neuropathy of radial, ulnar, medial, femoral, fibular and tibial nerves.
- What are the causes and clinical signs of facial nerve neuropathy?

Nervous system traumatic damages:

- What types of CCCT are differentiated now according to the up-to-date classification?
- What are the symptoms of cerebral concussion?
- What are the signs of spinal concussion, contusion and constriction, and of hematomyelia?
- What is the clinical difference of cerebral concussion and cerebral contusion?
- What are the signs of subarachnoid hematoma?
- What is “light interval”? In case of what CCCT type is it observed?
- Enumerate the necessary methods of patients with CCCT examination.

Perinatal affections of the nervous system, CCP:

- What factors cause the perinatal pathology of the nervous system?
- Give the definition of CCP. Name the clinical variations of CCP.
- What causative factors of CCP do you know?

Neuroses and somatoneurological syndromes:

- Give the classification of neuroses.
- What symptoms are typical for neurastheniaa, hysteria?
- Name the classification of somatoneurological syndromes.
- What manifestations of nervous system afflictions are observed in case of different somatic diseases?

Tests and typical tasks of the level II

Tests and typical tasks of the II level are represented in "Collection of test questions and tasks on nervous diseases for higher medical institutions" in the sections on the appropriate themes.

Materials for the lesson basic stage methodic supply

Professional algorithms for diagnostics of infectious-inflammatory, demyelinating diseases, affections of the peripheral nervous system, CCCT and spinal trauma can

be found in the methodical guidelines for practical trainings on the appropriate themes.

VI. The materials for self-education of the students

***Approximate scheme for self-education on the topic* "Final lesson #3"**

For self-study the students can use the materials of the methodical guidelines for practical trainings on the appropriate themes: "Miningitis. Arachnoiditis", "Encephalitis. Myelitis. Acute polymyelitis", "Multiple sclerosis. Acute multiple encephalomyelitis. Lateral amyotrophic sclerosis", "Diseases of the peripheral nervous system. Disturbances of the spinal cord nerves, neuropathies and neuralgias of the cranial nerves. Polyneuropathy", "Vertebrogenic affections of peripheral nervous system. Nonvertebrogenic affections of nerve radices, intravertebral nodes, plexus", "Closed craniocerebral trauma. Spinal trauma". During this lesson the knowledge and skills are generalized and systemized obtained during the previous lessons. The basic aspects of ethiopathogenesis, clinical manifestations and course, differential diagnostics and treatment of patients with infectious, demyelinating diseases, with closed craniocerebral spinal traumata, diseases of the peripheral nervous system are emphasized. The knowledge, obtained by students in the process of their independent extra-curriculum study on the topics "Cerebral abscess. Parasitogenic diseases of nervous system", "Nervous system pathology in case of HIV infection. Herpetic affections of nervous system", "Prion infections. Kreitsfeldt-Jacob disease", "Compressive-ischemic mononeuropathies", "Perinatal and natal diseases of nervous system. Children's cerebral paralysis", "Neuroses. Sleep disturbances", "Somatoneurological syndromes".

It is necessary to revise:

- classification, ethiology, clinical manifestations, forms of the disease course, principles of diagnostics and treatment of meningitis, arachnoiditis, myelitis, encephalitisis, poliomyelitis;

- clinical manifestations and diagnostics of cerebral abscess and parasitogenic affections;
- classification, clinical manifestations and forms of the nervous system afflictions course in case of HIV infection;
- ethiopathogenesis, peculiarities of clinical manifestations and course, diagnostics, including the early one, principles of treatment of the multiple sclerosis, LAS;
- classification, ethiopathogenesis, clinical manifestations, principles of diagnostics and treatment of peripheral nervous system diseases, compressive-ischemic mononeuropathies, and spinal trauma;
- ethiology, clinical manifestations, principles of diagnostics of parasitogenic, herpetic, prion afflictions of nervous system, Kreitsfeldt-Jacob disease;
- classification, ethiology, clinical manifestations, principles of diagnostics and treatment of and perinatal nervous pathologies;
- classification, ethiology, clinical manifestations, principles of diagnostics and treatment of neurosis, sleep disturbances and somatoneurological syndromes.

Classification of brain vascular diseases. Initial manifestations of lack in cerebral blood circulation. Slowly progressing and transient disturbances of cerebral blood circulation

I. Why do we study it?

Spread of vascular diseases is very big throughout the world. Mainly there are acute disturbances of cerebral blood circulation. Each 100 mln of people have 500 thousands strokes and cerebral vascular crises a year. Mortality because of these diseases according to WHO datas is 12-15% of total mortality. The best effectiveness in stroke prophylaxis might provide in time diagnosis of initial manifestations of lack

in cerebral blood circulation, transient disturbances of cerebral blood circulation. Pathogenetically-based therapy and cooperation of different specialists – neurologists, cardiologists, neurosurgeons – may be vital in prophylaxis and treatment of patients with cerebrovascular diseases.

II. **Study goals**

To know:

- classification of the brain and spinal cord vascular diseases (a=II);
- basic clinical forms of cerebral blood circulation (CBC) disturbances and risk factors of their incidence (a=II);
- etiology, pathogenesis of initial manifestations of lack in cerebral blood circulation (IMLCBC), clinical variants of their current (a=II);
- etiology, pathogenesis and clinical current of transient disturbances in cerebral blood circulation (TDCBC) (a=II);
- etiology, pathogenesis, clinical signs, diagnostics of slowly progressing disturbances in CBC (SPDCBC) (a=II).

To be able to do:

- to diagnose IMLCBC and TDCBC (a=III);
- to differ stages of discirculatory encephalopathy (DE) (a=III);
- to administer differential therapy for patients with TDCBC, SPDCBC and DE (a=III).

III. Educational goals:

1. To form attention and thoroughness during examining patients with disturbances in cerebral blood circulation.
2. Bring up thoughtfulness, humanism while treating patients with paresis and palsies.
3. To develop phsycological skills fo communicating with patients who have motor and speech disturbances.

IV. Contents of the lesson

Scheme 1

Initial manifestation of lack in cerebral blood circulation

Etiology _____→	− cerebral atherosclerosis
	− arterial hypertension
	− vegetative vascular dystony
Pathogenesis _____→	− cardiogenic hemodynamics alteration
	− disturbances in heart activity
	− inner carotis artery and spinal artery stenosis, circle of Willis arteries
	− vascular paresis, disturbances in venous outflow
	− increased blood viscosity, altered blood reologic characteristics
	− disturbances in neuronal metabolism

Clinical picture

preclinical (no symptoms)	***clinical (permanent)***	***paroxysmal***
unstable blood presure, signs of vegetative vascular dystony	headache, vertigo, noise in head, altered memory, decreased mental efficiency (not less than once a week during last 3 mnths)	vegetative paroxysms: cephalgic, vestibular, syncopal, sympathoadrenal, vagoinsular, mixed

Diagnostics _____→	ultrasound Doppler, encephalography, reoencephalography, electrocardiography, biochemical blood test (cholesterol, lipoproteins, coagulogramm), eye grounds

Treatment

preclinical stage	**clinical stage**	**paroxysmal stage**
risk factors elimination, meal, work regimen	sedatives, hypotensives or tonics, lipotropic, antiaggregants, nootropic drugs, physical methods	alpha- and beta-blockers, sedatives, antidepressants, physical therapy

Scheme 2

Transient disturbances of cerebral blood circulation

cerebral hypertensive crises			transient ischemic attacks
− general	vertebral basilar carotid	hyperkinetic	vertebral and carotid
− regional		hypokinetic	
− mixed		eukinetic	

Etiology _____→	atherosclerosis, arterial hypertension and their combination, vasculitis, heart and vascular anomalies, blood diseases, degenerative changes in upper cervical spinal cord etc.

Pathogenesis _____→	− microthrombosis, microemboly − microcirculatory disturbances (physicochemical blood characteristics alterations) − autoregulation mechanism breakdown − mechanism of lack in cerebral vascularisation − small lesions of hemorrhage

Clinical picture

cerebral hypertensive crises	*transient ischemic attacks*
general brain symptoms	mostly focal symptoms, often combined with general brain ones

Diagnostics

considering duration and reversibility of neurological deficit,
MRI of the brain datas, ultrasound Doppler

Treatment principles

- normalisation of blood pressure
- making heart activity better
- restoration of CBC
- reologic blood characteristics correction
- metabolism normalisation
- antiedemal therapy
- elimination vegetative vascular disturbances

Scheme 3

Chronic, slowly progressing disturbances of CBC

Discirculatory encephalopathy			**vascular dementia**	
I stage	II stage	III stage	multiinfarctial dementia	subcortical arteriosclerotical encephalopathy – Binsvanger disease

Etilogy of discirculatory encephalopathy	− arterial hypertension, cerebral atherosclerosis and their combination − diabetes mellitus − vasculites etc.
Pathogenesis	relatively stable lack in CBC because of altered reological blood characteristics and homeostasis, inertness of CBC autoregulation mechanisms

Clinical picture of discirculatory encephalopathy

	Compensation stage I	***Subcompensation stage II***	***Decompensation stage III***
Complaints	pseudoneurastenic syndrome – headache, dizziness, decreased memory to ongoing events	progressive loss of memory, character, mind, behavior alterations, sleep disturbances	decreased memory, unbalalnced gait, noise and heaviness in head, sleep disturbances. Complaints quantity decreases because of decreased criticism to one's condition.
Clinics	presence of microorganic symptoms (oral automatism reflexes, convergation disturbances, tendon reflexes are more vivid, pathological feet reflexes appear)	vestibular, atactic, extrapyramid, pyramid, astenodepressive, hypothalamic, convulsive syndromes	parcinsonian syndrome, hemisyndrome, pseudobulbar, cerebellar syndromes, coarse mental and memory disturbances, strokes may develop

Other helpful methods of diagnostics	eye ground examination, EEG, REG, ultrasound Doppler	ultrasound Doppler, CT scan, brain MRI	CT scan, brain MRI
Treatment	− therapy of basic vascular diseases (hypertensive disease, atherosclerosis etc.) − improving of cerebral blood circulation − metabolical defence of brain neuron from hypoxy		

V. Oral questions:

- What are the the pathogenetic mechanisms of IMLCBC developing?
- Give characteristics to clinical variants of IMLCBC current?
- What are main pathogenetic factors in developing of TDCBC?
- What are main focal symptoms in case of TIA occured in carotid area?
- What are the characteristics of TDCBC in vertebro-basilar area?
- Name stages of discirculatory encephalopathy. What are they differ in?
- Form principles of TDCBC treatment.
- Name basic groups of drugs that are used in curing patients with TDCBC.
- What should be all the measures directed on while treating patient with discirculatory encefalopathy?

Tests and typical tasks of level II

N	Tests of level II	Answers
1.	Name basic branches of inner carotid artery: a) front cerebral b) back cerebral c) middle cerebral d) superficial temporal e) back lower cerebellar	a), c)
2.	Name kind of cerebral vascular crises: a) general b) vegetative	a), d), e)

	c) cardial d) regional e) combined	
3.	Name main symptoms of IMLCBC: a) monoparesis b) diplopia c) aphasia d) headache, dizziness e) noise in head f) decreasing memory	d), e), f)
4.	What are the clinical manifestation of TDCBC in carotid system: a) mono- or hemiparesis b) alternated syndromes c) diplopia d) disarthria e) sensitive disturbances in paretic limbs f) dysphagia g) motor or sensitive aphasia	a), d), e), g)

N	Typical tasks of level II	Answers
1.	Woman 45 yrs old complains of frequent headaches, dizziness that have appeared 4 mths ago, bother her at the end of workday, disappear after rest. Neurologic exam shows no abnormality. What disease can you think of? What are the additional methods are necessary to carry out to prove diagnosis?	IMLCBC, ECG, REG, ultrasound Doppler, EEG, oculist consulting

2.	Patient 55 yrs old who suffers from diabetes mellitus one morning felt numbness in right limbs, motor aphasia appeared. He was hospitalized to neurologic department. In 2 hrs after administering vascular drugs symptoms have disappeared. What diagnosis should be written?	TDCBC in left middle brain artery area
3.	Patient 60 yrs old is frequently annoyed, complains of headache, dizziness. His exam shows oral automatism reflexes, eye ball convergation is weakened, anizoreflexing tendon and periostal reflexes. What disease you can think of?	DE I stage

Professional algorithm to form abilities and skills of patient with IMLCBC, TDCBC and DE examination study

№	Task	Instructions	Notes
1.	To master method of patient with IMLCBC, TDCBC and DE examination. To held the curation of patients with IMLCBC, TDCBC and DE.	1) Collect patient complaints, disease and life anamnesis; 2) check patient's somatic status making accent at heart and vascular systen examination, respiratory tract functioning, kidneys, endocrine system. 3) check patient's neurolohic status.	Group all the patient's complaints, mark their character: chronic (permanent or paroxysmal) or acute. Mark what diseases patient suffers of, does he has risk factors of vascular diseases. Pay attention to presence of global brain or focal symptoms, their combination.

		4) get acquainted with additinal findings	
2.	Make topic diagnosis, clinical diagnosis, define treatment plan	Based on shown pathological symptoms define the process localisation, formulate and justify clinical diagnosis	Group shown signs of damage and use schemes of lesson contents

Materials to control the final part of the lesson

Non typical tasks of level III

N	Non typical tasks of level III	Answers
1	Patient fo 62 yrs old who was suffering for a long time on a hypertensive disease suddenly felt his vision on left eye decreased, right limbs weakened with hyperreflexy and Babinsky symptom. In 30 min condition of a patient improved and in 1,5 hrs it was fully normal. Define the pathologic syndrome. What it might be due to? What investigations schould be done to this patient?	Transient crossed Lasko-Radovichi's syndrome. Stenosis of inner carotid artery in neck. Ultrasound Doppler, angiography.
2	Patient of 72 yrs old suffers from hypertensive disease last 20 yrs. He had had two myocardial infarctions. For last 5 yrs he shows increased level of blood sugar. A man does not receive regular treatment. He does not have complaints during exam. Shows decreased inteligence and memory. During exam he acts reluctantly. There is pseudobulbar syndrome with forced cry. Tonus in limbs is increased, deep reflexes are high, symmetric, bylateral Babinski symptom is shown. There are no sensitive disorder. Coordination tests are satisfying. Define topic and clinical diagnosis. What is the treatment plan?	Bylateral lesion in corticonuclear and corticospinal tracts on brain level. Discirculatory atherosclerotic and dysmetabolic encephalopathy stage III. Treatment of hypertensive disease and diabetes mellitus. Nootropic drugs, metabolism activators, antiaggregants, vasoactive medications

VI. The materials for self-education of the students

Approximate scheme for self-education with literature on topic "Classification of brain vascular diseases. Initial manifestations of lack in cerebral blood circulation. Slowly progressing and transient disturbances of cerebral blood circulation"

Main tasks	Notes
Recall: 1. Brain blood circulation	Draw main brain arteries, circle of Willis
Learn: 1. brain vascular diseases classification 2. etiopathogenesis, clinical manifestations and diagnostics of IMLCBC, TDCBC, DE	Write in notebook: − classification of cerebral blood circulation dicturbances; − clinical signs of IMLCBC, TDCBC, DE; − make the table of TDCBC and DE diagnostic differences
3. additional research methods that are used in case of vascular diseases	Learn to analyse ECG, EEG, ultrasound Doppler, CT scan, brain MRI, REG
4. treament of patients with IMLCBC, TDCBC, DE	Make schemes of different form of CBC disturbances treatment

Brain stroke

I. Why do we study it?

Acute organic disturbances of cerebral blood circulation belong to the diseases that are mostly spread and are one of the main reasons of mortality and population invalidisation. Brain strokes are the complications of heart diseases, cranial injuries, inflammative processes etc. Patient's life depends on early diagnostics and in-time therapy. Brain strokes belong to urgent pathology that's why awareness of their development, clinics, giving emergency care is necessary for every specialty's physician.

II. Study goals

To know:

- etiology, pathogenesis, clinical manifestations of brain strokes (a=II);
- differential diagnostics criteria of ischemic and hemorrhagic stroke (a=II);
- treatment principles for patients with brain strokes (a=II).

To be able to do:

1. define stroke in a patient, its character, area of damaged vessel (a=III);
2. make the plan of stroke patient's examination and analyse data of additional examination methods that are carried out (a=III);
3. administer therapy to ischemic and hemorrhagic stroke patients (a=III).

III. Educational goals:

1. Bring up in a future doctor responsibility for a patient, patient's in-time hospitalisation with giving one appropriate urgent help and ethic, humane and deontological approach.
2. Teach the clinical thinking with purpose of correct diagnostics of brain strokes.

IV. Contents of the lesson

Scheme 1

Brain stroke

hemorrhagic

- parenchimatose hemorrhage
- subarachnoid hemorrhage
- subarachnoid-parenchimatose
- parenchimatose-subarachnoid
- ventricular
- parenchimatose-ventricular

ischemic

- thrombotic
- embolic
- nonthrombotic (hemodynamic)

Scheme 2

Ischemic stroke

Mechanisms of developing

thromboembolic

- thrombosis of intracranial vessels
- occlusion of head great vessels
- arterioarterial thrombembolism
- - cardiogenic embolism
spasmus)
- disturbances in blood phisicochemical and reologic characteristics

hemodynamic

- breakdown of cerebral blood circulation
- vascular cerebral deficiency
- dystonic disturbances of brain vessels (sthasis, vasal paresis,

- cerebral stealing syndromes

Classification

according to severity stage

- stroke of light severity
- stroke of mild severity
- severe stroke

according to lesion localisation

- regional infarction
- cortical branches infarction
- lacunar infarction

clinical forms	atypical variants
− small stroke	− hemorrhagic infarction
− lacunar stroke	− mixed infarction
− progressing stroke	− mirror stroke
− completed stroke	− tumor-like stroke
	− pseudostroke

Scheme 3

Hemorrhagic stroke

Mechanism of developing	− rupture of vessel wall − blood serum and erythrocytes diapedesis
Clinical criterias of diagnostics	− young and middle age of a patient, hypertonic cerebral crises in anamnesis − sudden onset on the background of physical or emotional overtension − consiousness disturbances, marked meningeal symptoms − hyperemia of face, midriasis on the lesion side − breath is hoarse, irregular, body temperature is increased − blood pressure is extremely high, pulse is tensed − there are focal and dyslocation brainstem symptoms − blood formula of peripheral blood is moved to the left − cerebral spinal fluid is bloody, with presence of changed erythrocytes − on eye ground – hemorrhages in retina − M-echo is moved on 6-7 mm by datas of Echo-ES − brain MRI shows hemorrhage lesion

V. Oral questions:

− Name kinds of ischemic stroke.

− What is the mechanism ischemic stroke develops according?

− Name kinds of hemorrhagic strokes.

− Point mechanisms of hemorrhagic strokes.

− What symptoms appear in case of acute disturbance of CBC in inner carotid artery area?

− Name clinical manifestations of CBC acute disturbance in vertebral-basilar area?

− Make differential diagnosis of hemorrhagic and ischemic stroke.

− What additional examination methods help to define character of brain stroke?

− What are the ptrinciples of basic and differential therapy of ischemic and hemorrhagic strokes?

Tests and typical tasks of level II

N	Tests of level II	Answers
1	Name kinds of brain stroke: a) transient disturbance of cerebral blood circulation b) discirculatory encephalopathy c) hemorrhagic d) ischemic e) initial manifesations of CBC disturbances	c), d)
2	Name main signs of subarachnoid hemorrhage: a) general cerebral symptoms and psychomotor excitement b) bloody cerebral spinal fluid c) cerebral spinal fluid is not changed d) bowel and bladder disturbances e) Kernig symptoms, occipital rigidity f) hemiplegia g) hemianopsia	a), b), e)
3	Name main symptoms of inner carotid artery thrombosis: a) blindness or sight deterioration on side of thrombosis b) blindness or sight deterioration on the oposite side c) hemiplegia or hemiparesis on side of thrombosis d) hemiplegia or hemiparesis on the oposite side e) nystagmus	a), d)

N	Typical tasks of level II	Answers
1	Patient after emotional stress suddenly has lost his consiousness, face is hyperemied, blood pressure is	Hemorrhagic stroke

	250/150 mm Hg, coma, meningeal signs are positive. What might have happened to a patient?	
2	Patient has motor aphasia, right-sided central hemiparesis. What vasal area was damaged by brain stroke?	Area of left middle cerebral artery
3	Patient felt numb and weakened left hand after physical exercise on a background of atrial fibrillation. What happened in this case?	Thromboembolic ischemic stroke

Professional algorithm to form abilities and skills of examining patient with brain stroke

N	Task	Instructions	Note
1.	Possess method of examining patient with brain stroke. Held curation of a patient with ischemic and hemorrhagic stroke.	Carry out examination in following order: 1) collect patient's complaints; 2) examine somatic status; 3) check patient's neurological status; 4) get acquianted with additional examinational methods datas;	Pay attention to character and rate of complaint development, reasons, previous circumstances. Keep in mind patient's general condition: face color, pulse, breath, blood pressure, body temperature. Evaluate patient's conciousness according to Glasgow and Hunt-Hass scale. Pay attention to presence of meningeal syndrome, pupils' condition. Mark presence of motor disorder, speech disturbances, brainstem symptoms (dyslocational brainstem symptoms might be present). Group signs found and use contents of the lesson schemes.

			Pay attention to oculists note about condition of the eye ground, ECG, Echo-ES, EEG datas, blood and CSF parameters, brain MRI or CT scan.
2.	Put topical and clinical diagnosis, define treatment plan	Basing on symptoms found justify topical disgnosis, formulate clinical diagnosis.	

Materials to control the final part of the lesson

Non typical tasks of level III

N	Non typical tasks of level III	Answers
1	Patient 48 yrs old felt difficulties while swallowing food, shaking while walking, dizziness. There were episodes of dizziness at past. Examination showed not impaired conciousness, anisocoria S<D, segmental hypesthesia on left part of the face. Left half of the soft palate hangs down. The voice is hoarse with hypernasal resonance. Pharyngeal and palate reflexes are absent on the left, chokes while swallowing. Rightsided hemihypesthesia with rised reflexes on the right limbs. Coordination in the left arm and leg is impaired. Put topical and clinical diagnoses. What is leading clinical	Left half of medulla oblongata and left hemisphere of cerebellum are damaged. There is ischemic stroke in area of left back lower cerebellar artery. Wallenberg-Zakharchenko syndrome. Blood coagulogramm, ophthalmoscopy, transcranial ultrasound Doppler, brain MRI. Anticoagulants,

	syndrome? What additional methods of diagnostics are necessary? Treatment plan.	antihypoxants, cardial therapy, dehydration, nootropic medications.
2	Patient 45 yrs old is brought to clinic in heavy condition. He was healthy before that. A knife-like headache with several vomiting appeared suddenly while carrying heavy wardrobe. Convergent strabismus, occipital rigidity, Kernig symtoms on both sides are found. There are no palsies and sensitive disturbances, tendon reflexes on arms and legs are lowered evenly. What is the previous diagnosis? What tactics should doctor have in this case?	Subarachnoid hemorrhage. Make spinal pucture. In case of bloody CSF urgently transfer to neurosurgical department to complete examination and exclude possible cerebral aneurysm.

VI. The materials for self-education of the students

Approximate scheme for self-education with literature on topic " Brain stroke"

Main tasks	Notes
Learn: stroke classification, pathogenesis, clinics, diagnostics and treatment of ischemic and hemorrhagic stroke	pay attention to mechanisms of stroke developing, clinical, diagnostical and treatment peculiarities of brain stroke, write down in notebook main clinical signs and datas of additional diagnostical methods, treatment methods

Cerebral and spinal cord tumors

I. Why do we study it?

CNS tumors are often found in people of any age and are characterized by progression current. In many cases the diagnosis in time gives the possibility to save the patient's life.

II. Study goals

To know:

1. topographic-anatomical and histogenetic classification, clinical manifestations and diagnosing of cerebral tumor (a =II);
2. classification, clinical manifestations and diagnosing of spinal cord tumor (a=II).

To be able to do:

1. to examine patients with cerebral and spinal tumors (a =III);
2. to determine the early signs of cerebral and spinal tumors (a =III);
3. to administer necessary examinations of the patients with the suspected cerebral or spinal tumors (a =III);
4. to assess the results of the supplementary examination methods of these patients (a=III);
5. to develop the optimal tactics of patients with cerebral and spinal tumors treatment (a =III).

III. Educational goals:

1. Bring up in a future doctor responsibility for a patient, patient's in-time hospitalisation with giving one appropriate urgent help and ethic, humane and deontological approach.

2. Teach the clinical thinking with purpose of correct diagnostics of cerebral and spinal tumors.

IV. Contents of the lesson

Scheme 1

Spinal cord tumors

Classification

by localization

extramedullary ***intramedullary***

by histogenesis

meningioma, neurinoma, astrocytoma, sarcoma, ependymoma, glioblastoma, meduloblastoma, hemangioblastoma, metastases

Clinic

slow progression of the spinal cord compression clinical picture

radicular syndrome

paresthesia, pain, sensitivity disturbance by radicular type

segmental sensitivity and motor disturbances

Brown-Séquard's syndrome

conduction disturbance of the superficial sensitivity at the opposite site and central paresis at the tumor site

conduction disturbance of sensitivity motor functions

transversal section of spinal cord syndrome

central para- or tetraparesis, plegia, sensitive disturbances and pelvic functions disorders (in case of disease progression)

Diagnosing

- lumbar puncture with the liquor-dynamic probing to determine the permeability of the spinal cord subarachnoid space;
- liquor protein-cell dissociation, liquor congestive xanthochromia;
- ascending and descending myelography;
- vertebral and spinal cord MRI

Scheme 2

Cerebral tumors

Classification

by topography-anatomy

by histogenesis

supratentorial (tumors of cerebral hemispheres and hypophysal area)

subtentorial (tumors of cerebellum, cerebellopontine angle, pons cerebelli and medulla oblongata)

neuroectodermal (astrocytoma, oligodendroglioma, glioblastoma, meduloblastoma, neurinoma)
vascular tunic (meningeoma)
mixed
hypophysal (adenoma)
heterotopic (epidermoids, teratoids)
systemic (Recklinghausen' neurofibromatosis)
metastatic (cancer, melanoma, sarcoma)
tumors originating from the cranial bones
tumor-like formations (cyst, gumma)

Clinic

general cerebral symptoms
headache, vomiting, dizziness, consciousness disturbances, vision disorders

focal symptoms

primary
(resulting from the tumor effect directly on brain in the place of its localization)

secondary

adjacent
(appear as a result of secondary discirculatory, degenerative-toxic processes in the areas adjacent to the tumor)

distant
(appear as a result of intracranial pressure elevation, oedema, cerebral dislocation)

Diagnosing

- fundus changes (retinal veins dilation, papillary stasis, secondary papillary atrophy);
- inspection craniography (osteoporosis of ephippium back, intensification of the digital impression, intensification of the vascular pattern, in early childhood thinning of the cranial bones, its configuration changes and the cranial sutures dehiscence);
- shift of the medial “echo” at Echo-EC for more than 2 mm, enlargement of the third ventricular width;
- EEG – loci of slow waves, zones of epiactivity;
- cerebral CT and MRI;
- pneumoencephalography, angiography, radioisotope scanning

V. Oral questions:

- What is a classification of cerebral tumors?
- What is a classification of spinal cord tumors?

- What are the clinical signs of cerebral tumors?
- What are the clinical signs of spinal cord tumors?
- What is the diagnostics of cerebral and spinal cord tumors?
- Name the main treatment principles of CNS tumors.

Tests and typical tasks of level II

№	Tests of the level II	Answers
1.	Number the syndromes typical for intracerebral tumors clinic: a) hypertension syndrome; b) cerebral dislocation; c) Brown-Séquard's syndrome; d) focal syndrome	a), b), d)
2.	Say which of the below mentioned symptoms belong to general cerebral: a) headache; b) diplopia; c) motor aphasia; d) vomiting; e) extremities' paresis; f) unconsciousness	a), d), f)
3.	Say which symptoms are typical for cerebellum tumor: a) muscles hypotension; b) muscles hypertension; c) nystagmus; d) disorders of movement coordination e) monoparesis or monoplegia	a), c), d)

№	Typical tasks of level II	Answer

1.	During 3 months a patient has been suffering from headache, especially in the morning and at night. Sometimes he has vomiting. Gradually an unsteadiness at walk, intense tremor at digitonasal sign and genucalcaneal test fulfilled by right limbs and nystagmus at look right have appeared. The patient is staggering right in Romberg posture. Establish the clinical diagnosis. Describe the possible fundus changes.	Tumor of the cerebellum right hemisphere. Papillary stasis
2.	A patient developed a girdling pain in his right thoracic half at the level of Th7-Th8 segments. Some time later there appeared a weakness in his right foot with the increase of muscle tone and reflexes; there was a conduction disturbance of superficial sensitivity from Th10 level on left and a segmental one at Th7-Th8 level on right. The liquor examination revealed protein-cell dissociation. What is the clinical diagnosis?	Extramedullar tumor of spinal cord at Th7-Th8 level on right.

Professional algorithm to form abilities and skills of examining patient with cerebral and spinal tumor

№	Tasks	Instructions	Notes
1.	To master the methods of the patients with cerebral and spinal tumor examination. To examine patients with cerebral and spinal tumor	To examine by the following steps: 1) to collect the patient's complaints; 2) to collect the patient's medical and life history; 3) to carry out the neurological patient's examination, revealing the general cerebral and focal	Pay attention to the presence of liquor hypertension signs and meningeal symptoms

		symptoms, spinal cord affliction signs	
2.	On the basis of the obtained data to establish the topic diagnosis	Analyze the obtained data, substantiate the pathological process localization	Group the revealed symptoms, emphasize the syndrome or syndromes
3.	To establish the clinical diagnosis. To determine the treatment plan	Analyze the complaints, the anamnesis, neurological examination and supplementary methods of investigation data; carry out the differential diagnosing with the diseases having similar symptoms	In case of cerebral tumor suspicion, exclude the presence of vascular disease with pseudotumorous course, if intramedullar tumor is suspected - syringomyelia

VI. The materials for self-education of the students

Approximate scheme for self-education with literature on topic "Cerebral and spinal cord tumors"

Main tasks	Notes
To learn: 1) classification, clinical manifestations of cerebral and spinal cord tumors of different localization	To tabulate the classification of cerebral and spinal cord tumors in the notebook
2) the methods of diagnosing and treatment of CNS tumors	

Epilepsy. Nonepileptic paroxysmal states

I. Why do we study it?

About 1% of population suffers from epilepsy, in the world it's about 30,000,000 people. But the epileptic seizures, especially in childhood, happen much more often then the disease itself. Incomplete processes of myelinization, increased cerebral hydrophilia, metabolism lability and susceptibility to stimulation generalization in children contribute to this pathology. Timely patient's examination after the first seizure is of great significance to find out its cause, to carry out the differential diagnostics with nonepileptic states, and to administer treatment. 70 % of epileptic patients in case of adequate therapy are known not to have seizures at all, or they disappear for a long time.

II. Study goals

To know:

1. ethiology, pathogenesis of epilepsy and epileptic syndromes (a =II);
2. classification, clinical manifestations of the disease different forms, supplementary methods of examination (a =II);
3. basic principles of patients with epilepsy treatment (a =II);
4. types of nonepileptic paroxysmal disorders (a =II).

To be able to do:

1. collect and assess the patient's with epileptic seizures complaints and anamnesis (a=III);
2. examine the epileptic patient (a=III);
3. assess the supplementary examination methods data (a=III);
4. carry out the differential diagnostics of epilepsy, epileptic syndromes and nonepileptic paroxysmal states (a=III);
5. administer the treatment depending on the disease type (a=III).

III. Educational goals:

1. Bring up in a future doctor responsibility for a patient, patient's in-time hospitalisation with giving one appropriate urgent help and ethic, humane and deontological approach.

2. Teach the clinical thinking with purpose of correct diagnostics of epilepsy and epileptic syndromes.

IV. Contents of the lesson

Scheme 1

International classification of epilepsies and epileptic syndromes (1989)

I. Partial (focal, local)	**II. Generalized**	**III. Epilepsy and epileptic syndromes not attributed clearly to focal and generalized**	**IV. Special syndromes (epileptic reactions)**
- idiopathic - symptomatic - cryptogenic			- situation-based seizures (febrile convulsions, in case of metabolic, toxic disorders, etc.)

Scheme 2

Classification of epileptic seizures

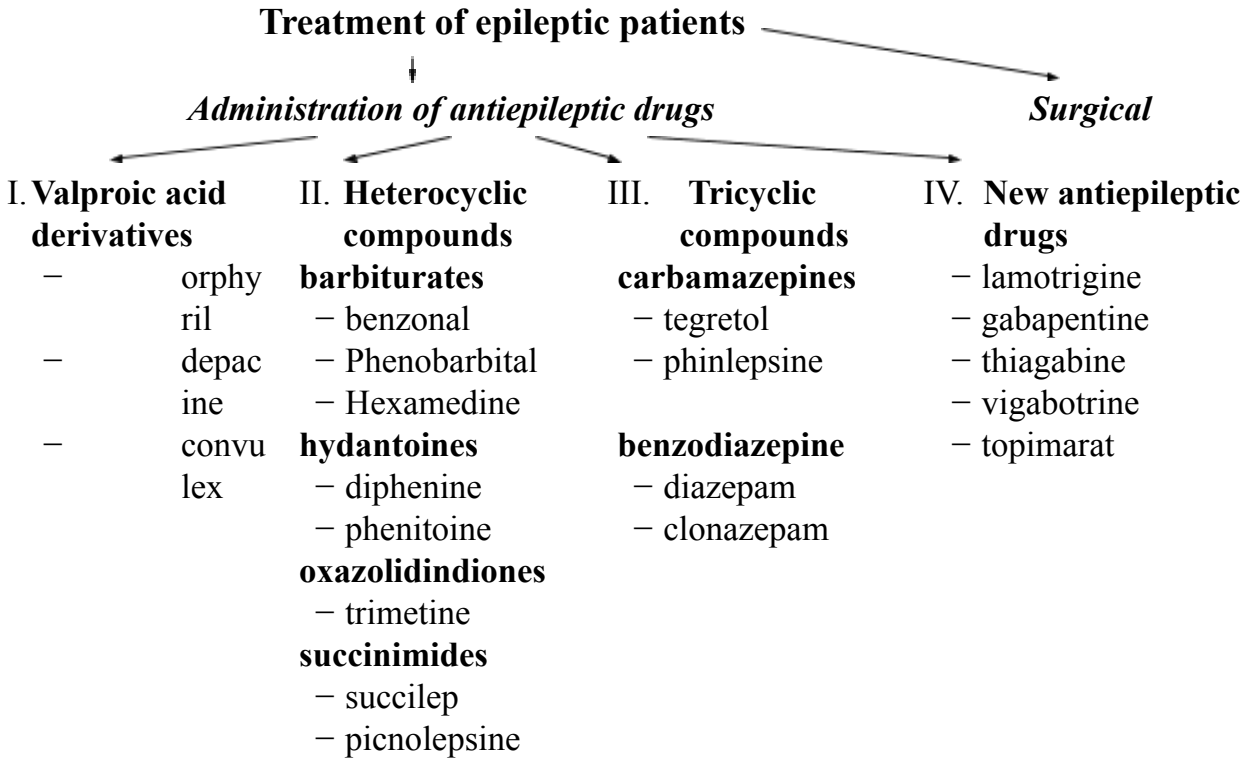
Partial		**Generalized**
−	locomotor	−convulsive (tonic-clonic, clonic, myoclonic)
−	sense	
−	vegetative-visceral	−convulsiveless (absences)
−	psychic equivalents	−polymorphous
−	secondary-generalized	

Scheme 3

Diagnosing of epilepsy

EEG Cerebral MRI Cerebral CT Echo-EC

Scheme 4



Scheme 5

Nonepileptic paroxysmal states

1. Anoxic paroxysms (neurogenic syncopes, syncopes at atrio-ventricular conductive disorder, paroxysmal tachycardia, cardiac fibrillation, attacks of transit global amnesia in case of cerebral circulatory disorder in the vertebrobasilar basin, drop attack)
2. Vegetovascular paroxysms (panic attacks, hyperventilatory attacks)
3. Attacks of toxic origin (effect of toxin in case of tetanus, strychnine)
4. Hypoglycemiac attacks
5. Psychogenetic attacks (hysteric)
6. Attacks of hypnotic origin
7. Affective-respiratory attacks in early childhood

8. Nonepileptic myoclonias (physiological myoclonias of falling asleep, awakening, fear, some forms of hiccup; pathological nonepileptic myoclonias: subcortical or segmental hyperkinesia)

V. Oral questions:

1. Give the definition of epilepsy.
2. What is the etiology and pathogenesis of epilepsy?
3. What is the classification of epilepsy?
4. Describe different types of epileptic seizures.
5. When do epileptic seizures occur?
6. Give the examples of epileptic syndromes.
7. Give the examples of nonepileptic paroxysmal states.
8. Carry out the differential diagnostics of epileptic seizures with nonepileptic paroxysms.
9. What is the treatment tactics in case of epilepsy?
10. What diagnostic methods are used in case of epilepsy?
11. Name the typical signs of EEG changes in case of epilepsy.

Tests and typical tasks of level II

№	Tests of the level II	Answers
1.	Say where is a source of epileptic stimulation located, if the attack is preceded by motor aura: a) temporal zone b) occipital zone c) parietal zone d) postcentral sulcus e) precentral sulcus	e)
2.	Say what rhythms at EEG are dominating in healthy adult: a) alpha rhythm b) theta rhythm	a), e)

	c) delta rhythm d) spike waves e) beta rhythm	
3.	Which of the following cerebral diseases can be accompanied by epileptic syndrome? a) chorea minor b) cerebral tumor c) Huntington's chorea d) Marie's cerebellar ataxia e) Cerebral circulatory disorder	b), c), e)

№	Typical tasks of the level II	Answers
1.	A patient is developing simple visual hallucinations (photopsy). Then he becomes unconscious and generalized seizure with tonic-clonic convulsions lasting for 3 minutes starts. Where is the epileptic focus localized? Name the seizure type.	Occipital zone medial surface cortex. Partial epileptic seizure with the secondary generalization
2.	A patient being conscious develops clonic convulsions in his left foot, which radiate into left arm and left face half. The seizure lasts for 2 minutes. Where is the epileptic focus localized? Name the seizure type.	Upper cortex zone of right precentral sulcus is stimulated. Simple partial motor seizure with Jackson’s marsh.

Professional algorithm to form abilities and skills of examining patient with epilepsy and epileptic syndromes

№	Tasks	Instructions	Notes
1.	To master the methods of the patients with	To examine by the following steps: to collect the patient’s complaints;	Collecting anamnesis pay attention to the seizures duration, regularity and stereotype, their correlation

	epilepsy and epileptic syndromes examination. To examine the patient with epilepsy or epileptic syndromes	to collect the patient's medical and life history; to examine the cranial nerves functions, state of reflex-motor and coordination spheres, to investigate sensitivity, higher cortex functions and to assess the supplementary examination methods data	with the day time, patient's condition after the seizure, presence of organic neurological symptoms. Collect the data about hereditary predisposition to such seizures
2.	To establish topic and clinical diagnoses, to administer treatment	To establish the clinical diagnosis use the structural-logical scheme of lesson contents. To carry out the differential diagnostics of epileptic seizures with nonepileptic paroxysmal states, to administer treatment and to assess the disease prognosis.	Pay attention to the epileptic seizures character in order to the administer the adequate course of antiepileptic medicines

VI. The materials for self-education of the students

Approximate scheme for self-education with literature on topic "Epilepsy. Nonepileptic paroxysmal states"

Main tasks	Notes
To learn: 1) ethiology, pathogenesis of epilepsy and epileptic syndromes	To name the main ethiological and pathogenetic factors of epilepsy and epileptic syndromes
2) classification, clinical manifestations of different epilepsy types	To tabulate the classification of epilepsy
3) nonepileptic paroxysms	To tabulate the differential diagnostics of epilepsy and nonepileptic paroxysms
4) supplementary diagnostic methods of epilepsy	To know EEG changes in case of epilepsy

2) basic principles of epileptic patients treatment	To tabulate the treatment of patients with different epilepsy types

HEREDITARY DISEASES OF NEUROMUSCULAR APPARATUS. MYASTHENIA AND MYASTHENIC SYNDROMES

I. Why do we study it?

Hereditary diseases of neuromuscular apparatus are a big group of pathological states, that are characterized by muscular atrophy, muscular weakness, disturbance of static-dynamic functions. They have a gradually progressing clinical course, that further leads to disability of patients. Peculiarities of clinical manifestations of these diseases, differentially-diagnostic signs, treatment principles must be studied during the "Nervous diseases" course by doctors of any profile. It will contribute to in-time recognition and treatment of hereditary diseases of neuromuscular apparatus.

Doctors of each specialty must know pathogenesis, clinical forms, diagnostics, treatment principles of myasthenia and myasthenic syndromes, that gives a possibility to prevent hard complication of this disease – myasthenic stroke. Each doctor must know its clinical manifestations and be able to provide emergency medical help.

II. Study goals:

To know:

1) up-to-date classification of hereditary diseases of neuromuscular apparatus (a=II);
2) Pathogenesis, clinical manifestations, methods of diagnostics, main principles of treatment of patients with hereditary diseases of neuromuscular apparatus (a=II);
3) Etiopathogenesis, clinical forms, methods of diagnostics and treatment of myasthenia and myasthenic syndromes (a=II).

To master skills of:

1) examination of patients with hereditary diseases of neuromuscular apparatus (a=III);
2) examination of patients with myasthenia and myasthenic syndromes (a=III).

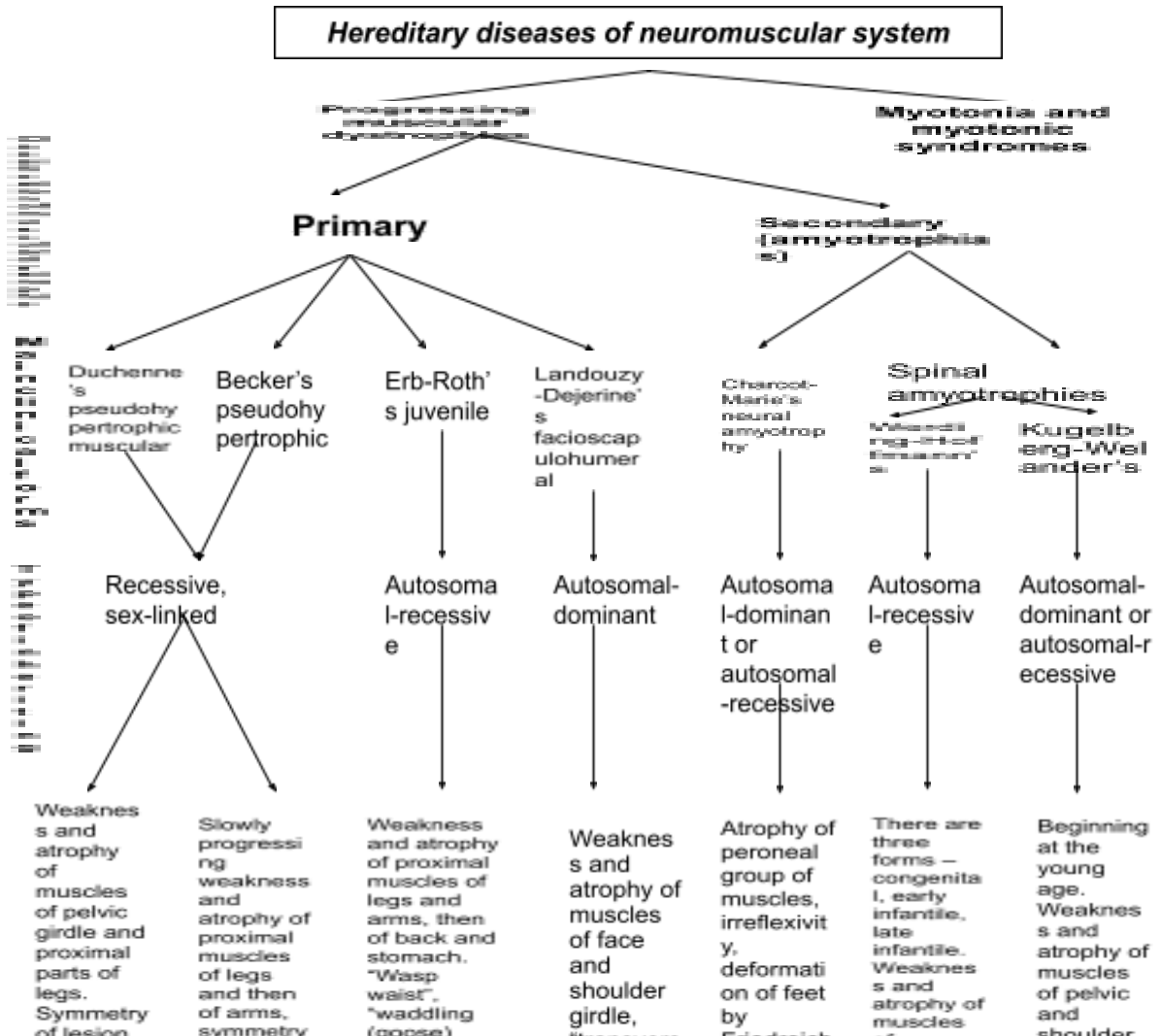
To be able:

1) To diagnose hereditary diseases of neuromuscular apparatus, myasthenia and myasthenic syndromes (a=III);
2) To choose tactics of treatment of patients with hereditary diseases of neuromuscular apparatus, myasthenia (a=III).

III. Educational goals:

1. A feeling of sympathetic and humane attitude to patients with hereditary diseases and myasthenia must be instilled in students.
2. Students must be persuaded in the necessity of profound knowledge and responsibility for correct professional actions in case of diagnostics and treatment of patients with hereditary diseases of neuromuscular apparatus and myasthenia.

IV. Contents of the lesson



Clinical Manifestations

Diagnos

Treatment

– normalization of muscular trophism: ryboxin, mildronate, rhataboli, cerebrolisin;
– improvement of conduction through nerves: prozerin, galantamin, B group vitamins;
– improvement of microcirculation: nicotinic acid, pentoxyphillin, xanithol nicotinate;
– exercise therapy, massage;
– balneotherapy, magnetotherapy, electrophoresis with antiholinesterase and vasoactive preparations, darsonvalism, paraffinotherapy
– diet with great content of proteins

Figure 2

Myotonia

Myotonias are a group of neuromuscular diseases that have a common feature – impairment of muscular tonus that is expressed in complication of muscular relaxations after their active contraction

Amyotonia congenita (Leyden-Thompsen's disease) Becker's myotonia

– a symptom of "a thumb"
– a symptom of "a tongue"
– athletic build
– myotonic reaction to electromyogram

Myotonic dystrophy (Rossolimo-Steinert-Kurshman's disease)

Autosomal-dominant type of inheriting

– myotonic spasms
– increase of mechanical excitation of muscles
– progressing muscular atrophy
– "corroded" feet and "monkey" hands
– "gait of a cock"
– endocrine disorders
– cardiovascular disorders
– mental power impairment

Treatment

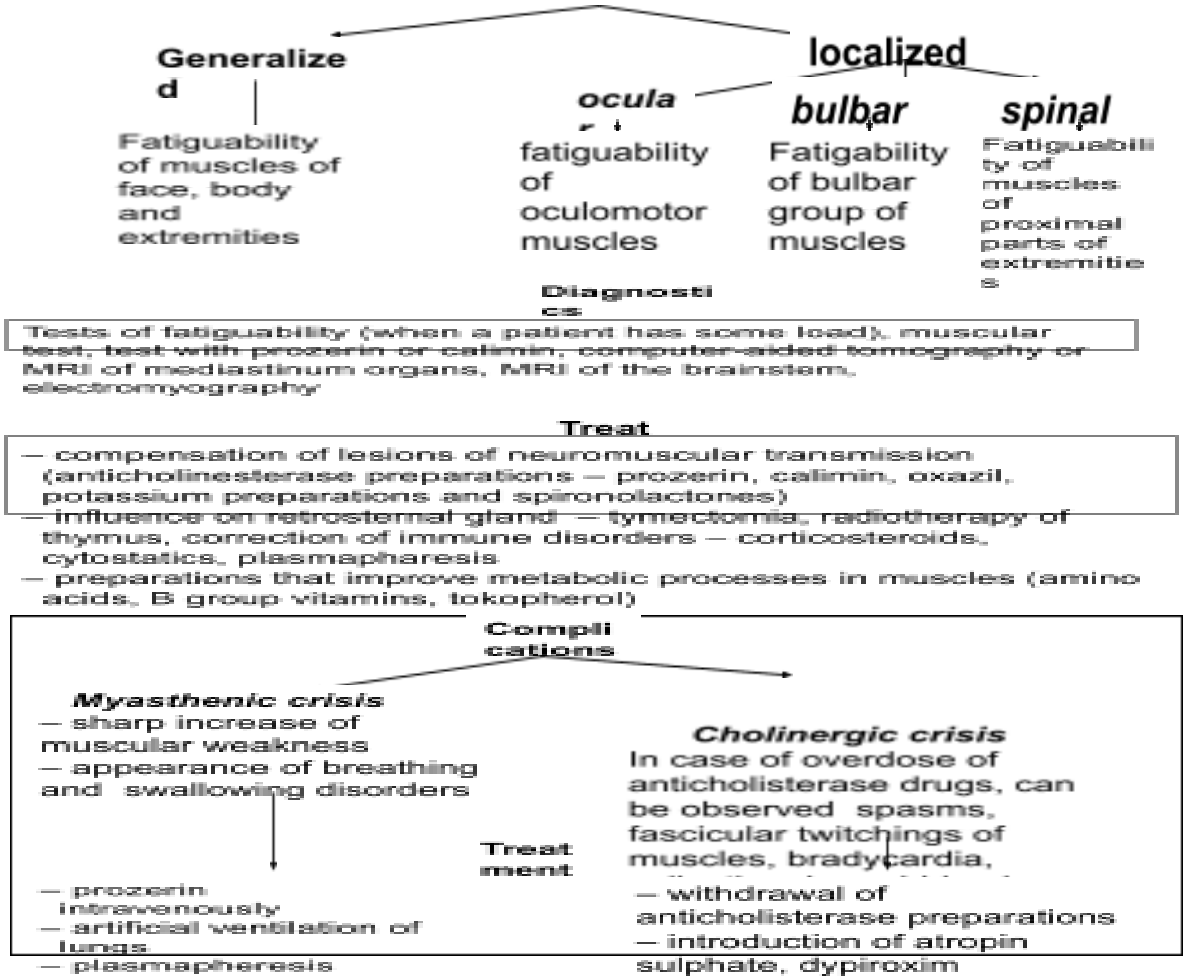
Difenin, diakarb, thermal procedures, magnetotherapy, massage, galvanization of nerve trunks

Myasthenia

Figure 3

Myasthenia is an autoimmune disease with pathological muscle fatigability, that appears as a result of impairment of neuromuscular transmission. At the heart of this impairment there is antibodies' blockade by postsynaptic acetylcholine receptors.

Clinical forms



V. Oral questions:

- What is the classification of hereditary diseases of neuromuscular apparatus?
- What are pathogenetic mechanisms of appearance of progressive muscular dystrophies?
- What are clinical forms of progressive muscular dystrophies? Give characteristics of each form.
- Enumerate forms of secondary progressive muscular dystrophies.
- Give characteristics of Charcot-Marie's neural amyotrophy.
- What are the main clinical forms of myotonias?
- What is pathogenesis of myasthenia?
- What are the main clinical forms of myasthenia?

– What are contemporary methods of diagnostics of myasthenia and myasthenic syndromes?
– What are the main principles of treatment of myasthenia?
– Indicate complications, possible in case of myasthenia, and their treatment.

Tests and typical tasks of II level

№	Tests of II level	Standard of answer
1	Indicate pathogenesis of progressive muscular dystrophies: a) derangement of copper metabolism b) theory of derangement of cyclic nucleotides metabolism в) derangement of dopamine metabolism c) theory of tissue hypoxia d) theory of imperfect membranes	b); c); d)
2	Choose clinical signs of Charcot-Marie's neural amyotrophy: a) atrophy of peroneal group of muscles b) fascicular twitchings in muscles c) paresis of extremities of central type d) decrease or absence of tendon reflexes e)" gait of a cock" f) weakness of muscles of shoulder and pelvic girdle	a); d); e)
3	Indicate typical symptoms of myasthenia: a) fibrillar muscular twitchings b) muscular weakness with repeated actions c) sensitivity impairment	b); d)

	d) myasthenic reaction with electromyogram-research e) pelvic disorders	

№	Typical tasks of II level	Standard of answer
1.	A patient is 27. Since the age of 14 has noticed fatigue in his legs, especially in hips while going upstairs. For a few years fatigue in legs and muscles of shoulder girdle was growing. Patient's mother and elder sister had the same symptoms. It is objectively found that palpebral fissures are dilated, lips are thickened. Hypotrophy of muscles of shoulder and pelvic girdle, "winglike shoulder-blades" are observed. Tendon reflexes are impaired, there are no sensitive impairments. What is the presumptive diagnosis? What is the form of the disease?	Progressive muscular dystrophy. Juvenile form of Erb-Roth's
2.	A patient of 56 has a weakness in feet, changed gait, muscles of shins and feet are growing thin. Has been suffering from the disease since the age of 30. There is detected impairment of knee and Achilles reflexes, hypothropy of muscles of hands and feet, hypesthesia in the form of "mittens" and "socks". Vegetative-trophic lesions in hands and feet are observed. What is the presumptive diagnosis?	Charcot-Marie's neural amyotrophy
3.	A young woman with asthenic type of build complains of quick muscular fatigue, impossibility of long distance walks and long speaking, has worsened swallowing while	Myasthenia

	eating. After prozerin the state of the patient gets better. What is the presumptive diagnosis?	

VII. Materials of methodic provision of the main stage of the lecture

Professional algorithm of developing skills and abilities of examination of the patients with hereditary diseases of neuromuscular apparatus and myasthenia.

№	Task	Guidelines	Notes
1.	To master methodology of examination of patients with hereditary diseases of neuromuscular apparatus and myasthenia To examine patients with hereditary diseases of neuromuscular apparatus	To carry out examination in the following order: 1) To obtain the complaints of a patient; 2) To obtain the case history; 3) To examine higher brain functions; 4) To check presence of meningeal symptoms; 5) To check functions of cranial nerves; 6) To check reflectory-motor function and coordination of movements; 7) To check sensitivity function; 8) To examine test of fatiguability of muscles when they are active (in	Find out if the disease is hereditary, at what age it started, what its course is. Take into account gait of patients, configuration of their legs and feet, presence of muscular atrophies and symptoms, which appear in case of muscular atrophy, fascicular and fibrillar twitching, pseudo-hypertrophies, lowering of tendon reflexes. Pay attention if neurological pathology is combined with lesions of cardiovascular,

	and myasthenia	case of presence of myasthenia); 9) To analyze data of additional methods of examination	neuroendocrine systems, system of bones.
2.	On the basis of the detected data to give topical and clinical diagnosis. To make a treatment regimen	10) To locate pathological process; 11) To carry out differential diagnostics; 12) To give clinical diagnosis, form and stage of the disease; 13) To assess process of the disease; 14) To make a treatment regimen.	Group the detected symptoms into syndromes. Use structurological figures of the contents of the lecture.

2. Control materials for the final part of the lecture

Atypical tasks of III level

№	Atypical tasks of III level	Standart of answer
1.	A patient T., aged 18, complains of weakness in legs and arms, mainly in approximal parts, his muscles growing thin, difficulties while walking. Has been ill for about 5 years, the disease is slowly progressing. There is detected slight atrophy of muscles of shoulder and pelvic girdles. Shoulder-bones are “winglike”. Tendon	Lesion of skeletal muscles. Erb-Roth’s progressive muscular dystrophy. Ryboxin, retabolil, nicotinic acid, B group vitamines,

	reflexes are lowered. There are no pathological reflexes. There is evident lumbar lordosis, test of “stair by stair” standing up, “waddling (goose) gait”. Define the localization of the pathological nidus. Give clinical diagnosis and indicate form of the disease. What treatment will be prescribed?	tokopherol, exercise therapy, massage. Balneotherapy, electrophoresis with anticholinesterase and vasoactive drugs
2.	3 weeks after the flu a patient, aged 30, felt general muscular weakness, deglutitive problem, rhinolalia, that got more evident after load of corresponding muscles. What is the presumptive diagnosis? What is the form of the disease? What additional examinations can prove the diagnosis? What treatment must be prescribed?	Myasthenia, generalized form. Electromyogram, computer-aided tomography or MRI of mediastinum organs. Kalimin, potassium drugs, prednizolon

3. **Materials of the methodic provision of students’ self-preparation**

Approximate chart of independent work with the literature on the topic “Hereditary diseases of neuromuscular apparatus. Myasthenia and myasthenic syndromes”

Main tasks	Guidelines
To learn: 1) classification, pathogenesis, clinical manifestations, diagnostics, treatment of hereditary diseases of neuromuscular apparatus	To complete a table with classification, clinical forms, methods of diagnostics and treatment of each disease of this group
2) classification, pathogenesis, clinics, diagnostics, treatment of	To complete a table with classfication, clinical forms, methods of diagnostics and

myasthenia and myasthenic syndromes	treatment of patients with myasthenia. To write about differentially-diagnostic criteria of myasthenia and myasthenic syndromes

HEREDITARY DISEASES WITH LESION OF PYRAMIDAL, EXTRAPYRAMIDAL AND COORDINATION SYSTEMS

I. Why do we study it?

Hereditary diseases of nervous system are very wide-spread, and people of different age (children, young and middle-aged people) suffer from them. These diseases often lead to disability of patients. These facts define actuality of this subject.

II. Study goals:

To know:

1) Etiopathogenesis, clinical manifestations, methods of diagnostics, main principles of treatment of Strümpell's familial spastic paralysis (a=II);
2) Etiopathogenesis, clinical forms, methods of diagnostics and treatment of hereditary diseases with lesion of extrapyramidal system – hepatolenticular degeneration, Huntington's chorea, torsion dystonia, Parkinson's disease (a=II);
3) Etiopathogenesis, clinical forms, methods of diagnostics and treatment of familial ataxias (a=II).

To master skills of:

Examination of patients with hereditary diseases with lesion of pyramidal, extrapyramidal and coordination systems (a=III);

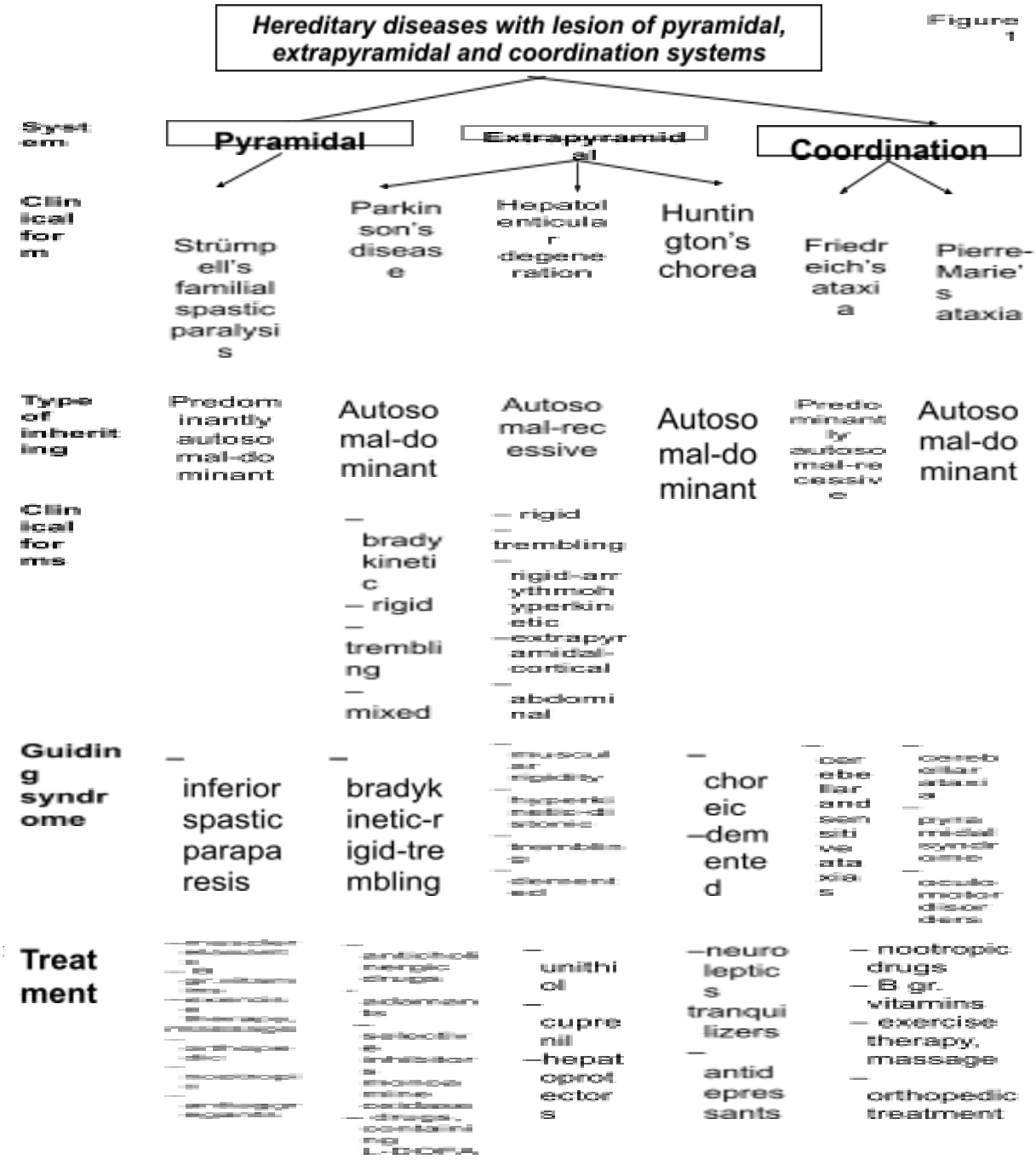
To be able:

1) To diagnose hereditary diseases with lesion of pyramidal, extrapyramidal and coordination systems, to carry out differential diagnostics with diseases that have similar symptoms (a=III);
2) To choose therapeutic approach to treatment of patients with hereditary diseases with lesion of pyramidal, extrapyramidal and coordination systems (a=III).

III. Educational goals:

1. It's necessary to instill in a student sympathetic, human attitude to patients with hereditary diseases of nervous system.
2. To persuade students in the necessity of profound knowledge and responsibility for the correct professional actions in case of diagnostics and treatment of patients with hereditary diseases with lesion of pyramidal, extrapyramidal and coordination systems.

IV. Contents of the lesson



Differentially-diagnostic criteria ofFriedreich's and Pierre-Marie's ataxias Figur e 2

Signs	Fridreich's ataxia	Pierre-Marie's ataxia
Type of inheriting	Autosomal-recessive, very rarely – dominant	Autosomal-dominant
Patient's looks at the beginning of the disease	6-15 years	20-40 years, on the average – 34 years
Characteristics of changes of reflexes	Impaired	High
Presence of pyramidal signs	Are observed on the late stages of the disease	Are observed already on the early stages
Lesion of cranial nerves	Absent	Oculomotor disorders, impairment of eye-sight
Presence of sensitive ataxia	Is observed already on the early stages	Is not observed
Deformation of feet and spine	Is present almost in all cases	Are not typical

V. Oral questions:

- What is the classification of the hereditary diseases of nervous system with lesions of pyramidal, extrapyramidal and coordination systems?
- What is the process of spreading of the disease in the family in case of autosomal-dominant and autosomal-recessive types of inheriting?
- Indicate pathogenic mechanism of development of hepatolenticular degeneration.
- What are clinical forms of hepatolenticular degeneration?
- What are principles of treatment of hepatolenticular degeneration?
- What are pathogeneic mechanisms of development of Huntington's chorea?
- What is the clinical presentation of Huntington's chorea?
- Indicate clinical peculiarities of Strümpell's familial spastic paralysis?
- On the basis of which data is Pierre-Marie's ataxia diagnosed?
- Give characteristics of clinical picture of Friedreich's ataxia?

– What are pathogenetic mechanisms of appearance of the main symptoms of Parkinson's disease?
– What are contemporary principles of treatment of Parkinson's disease?

Tests and typical tasks of II level

№	Tests of II level	Standard of answer
1	2	3
1	Choose hereditary diseases with lesion of coordination system: a) Progressive muscular dystrophy b) Myasthenia c) Pierre-Marie's ataxia d) Friedreich's ataxia e) Strümpell's familial paralysis	c); d)
2	Choose symptoms of hepatolenticular degeneration a)hemiplegia b) congestive discs of optic nerves c) Kayser-Fleischer's rings d) sensitive disorders e) signs of liver lesion f) hyperkinesias	c); e); f)

1	2	3
3	Choose structures, which are impaired in case of Huntington's chorea a) cerebellum	c);d); f)

	b) cranial nerves c) caudate nucleus d) putamen e) sensitive tracts f) cortex of cerebral hemispheres	
4.	Choose signs of Friedreich's familial ataxia: a) bulbar lesions b) Brown-Sequard's syndrome c) Friedreich's foot d) ataxia, predominantly sensitive e) impairment of deep sensitivity	c); d); e)

№	Typical tasks of II level	Standard of answer
1	A patient has wide hyperkinesias against the background of impaired muscular tonus, demention. Got ill at the age of 40. What is the patient's disease?	Hunington's chorea
2	A patient has symptoms of cerebellar function's disorder, moderate central paraparesis, dementia.The patient's father has a similar disease. What disease can be suspected?	Pierre-Marie 's ataxia

2. Materials of the methodic provision of the main stage of the lecture

Professional algorithm of examination of patients with hereditary diseases with lesion of pyramidal, extrapyramidal and coordination systems.

№	Task	Guidelines	Notes

1.	To master methodology of examination of patients with hereditary diseases with lesion of pyramidal, extrapyramidal and coordination systems To examine patients with hereditary diseases with lesion of pyramidal, extrapyramidal and coordination systems	Carry out investigation in the following order: 1) to obtain patient's complaints; 2) to obtain the case and life history; 3) to investigate higher cortical functions, presence of meningeal symptoms, examine functions of cranial nerves, reflectory-motor and sensitivity spheres, of coordination of movements and function of extrapyramidal system; 4) to group detected symptoms into syndromes; 5)to find localization of pathological process,	Find out if there are cases of the diseases among patient's relatives, at what age the disease started, what its course is. Pay attention if the patients have symptoms of lesion of pyramidal, extrapyramidal, coordination systems, Find out if neurological symptoms are combined with pathology of other organs – if there are signs of myocardiodystrophy, deformation of feet, spine, lesion of liver. Pay attention to the treatment regimen, taking into account pathogenetic mechanisms of hereditary diseases with lesion of pyramidal system

2.	Give a topical and clinical diagnosis, carry out differential diagnostics, prescribe some treatment	6) to analyse data of additional methods of investigation; 7) to give a clinical diagnosis, name form and stage of the disease; 8) to make a disease forcast; 9) to make a treatment regimen	

3. Control materials for the final stage of the lecture

Atypical tasks of III level

№	Atypical tasks of III level	Standard of answer
1.	An oculist found Kayser-Fleischer's rings of greeny-brownish colour in a patient with extrapyramidal rigidity, hyperkinesias, mentality changes and mental power impairment. What disease is described? What is the form of the disease? What treatment must be prescribed? What examinations should be carried out?	Hepatolenticular degeneration. Extrapyramidal –cortical form. Cuprenil or barium sulphate, vitamins, drugs with calcium, hepatoprotectors, corresponding diet. Blood analysis and ceruloplasmin, control of copper's renal excretion
2.	A patient of 12 has a nistagmus, ataxia in arms and legs, adiadochokinesia, scanned speech, impairments of muscular-articular and vibration	Coordination system. Friedreich's ataxia. Tonic methods, nootropic, exercise therapy, massage.

	sensitivity. There is talipes equinovarus and deformed spine. Is observed hollow cavovarus deformity, instep is high. The disease is slowly progressing. Lesion of what system is predominant? What is the clinical diagnosis? What treatment must be prescribed?	
3.	A patient aged 18 has lower spastic paraparesis with Babinski's and Rossolimo's signs, foot clonuses, spastic gait, tendinous contractions. Abdominal reflexes are preserved. Function of organs of small pelvis is not impaired. Mental power is preseved. What is clinical diagnosis. What is the course of the disease? What treatment must be prescribed?	Strümpell's familial paralysis. The course of the disease is slowly progressing. Medications that lower muscular tonus, tranquilizers, B group vitamins, methabolic drugs, vasoactive preparations, exercise therapy, physiotherapeutic methods.

4. materials of the methodic provision of students' self-preparation

Approximate chart of independent work with literature on the topic "Hereditary diseases with lesion of pyramidal, extrapyramidal and coordination systems"

Main task	Guidelines
To learn: 1) classification, etiopathogenesis, type of inheriting, pathomorphology. Clinical picture, diagnostics, principles of treatment	To draw a table with clinical manifestations of Strümpell's disease. Pay attention to differences from multiple sclerosis

of Strümpell's familial spastic paralysis	
2) classification, pathogenetic mechanisms of appearance, type of inheriting, pathomorphology, clinical picture, diagnostics, treatment principles of hereditary diseases with lesion of extrapyramidal system	To make a table with classification of hereditary diseases with lesion of extrapyramidal system. To learn in details clinical forms, treatment principles of each disease of this group.
3) classification, type of inheriting, pathomorphology, clinical picture, diagnostics, treatment principles of hereditary diseases with lesion of coordination system	To make a table of differentially-diagnostic criteria of Friedreich's and Pierre-Marie' familial ataxias. Pay attention to the difference between Pierre-Marie's ataxia and multiple sclerosis.

Final lecture # 4

I. Why do we study it?

This lecture sums up study of such branches of neurology as vascular diseases, brain and spinal cord tumors, epilepsy, hereditary diseases with lesion of nervous system. All these pathological states constitute group of very spread and very difficult for treatment diseases. Some of them, for example, vascular and epileptic states require urgent medical help, that must be given by doctors of different specialties.

This lecture also controls and revises the level of knowledge, obtained by students in the course of independent extracurricular work. This knowledge contains the following topics: acute and slow-progressing disorders of spinal blood flow, headaches, migraine, angioneuroses, exogenous neurointoxications, botulism and other food poisonings, radiation lesions of nervous system, vibratory disease, syringomyelia, craniovertebral anomalies, neurosyphilis, chromosome diseases and hereditary diseases of metabolism, leukodystrophies, clinical pharmacology of drugs which are used in neurology.

II. Study goals:

The lecture is aimed at generalization and systematization of knowledge, skills and abilities, obtained in the course of previous lectures and extracurricular independent work.

To know:

1)classification, etiology, pathogenesis, clinical manifestations, principles of diagnostics and treatment of vascular diseases of nervous system (a=II);

2)classification, clinical manifestations, diagnostics and principles of treatment of brain and spinal cord tumors (a=II);

3)etiopathogenesis, classification, clinical picture, diagnostics and treatment of epilepsy (a=II);

4)classification, clinical manifestations, diagnostics and principles of treatment of neurosyphilis (a=II);

5)classification, pathogenesis, clinical signs, principles of diagnostics and treatment of hereditary diseases with lesion of nervous system, chromosome diseases, hereditary diseases of metabolism, leukodystrophies (a=II);

6)etiopathogenesis, classification, clinical diagnostics and treatment of cephalgias, angioneuroses (a=II);

7)classification, clinical manifestations, principles of diagnostics and treatment of exogenous neurointoxications, botulism, food poisonings, radiation lesions of nervous system, vibratory disease (a=II);

8)classification, clinical manifestations, principles of diagnostics and treatment of syringomyelia, craniovertbral anomalies (a=II);

9)clinical pharmacology of drugs which are used in neurology (a=II).

To be able:

1) To give diagnosis of vascular diseases of nervous system, brain and spinal cord tumors, epilepsy, hereditary and toxic diseases of nervous system, vibratory disease, syringomyelia and craniovertebral anomalies, neurosyphilis, lesion of nervous system in case of acute and chronic radiation sickness, different kinds of cephalgias and angioneuroses (a=III);
2) To carry out differential diagnostics of above-mentioned diseases with diseases that have similar symptoms (a=III);
3) To give urgent medical help to the patients with vascular diseases of nervous system, epileptic seizure and epistatus, hypertensive syndrome in case of brain tumor, syringobulbia, toxic lesion of nervous system, myasthenic crisis (a=III);
4) To make a plan of examination and treatment of patients with vascular, hereditary, toxic and radiation lesions of nervous system, syringomyelia,

vibratory disease, brain and spinal cord tumor, neurosyphilis, epilepsy, different cephalgias and angioneuroses (a=III).

III. Educational goals:

1. To form in students understanding of future doctor's professional responsibility for acuteness and correctness of examination of patients and his clinical diagnosis.
2. To develop deontological skills, obtained in the course of previous lectures and examination of patients with vascular and hereditary lesions of nervous system, epilepsy, brain and spinal cord tumors.
3. To form students' motivation to give in-time qualified help to patients with vascular, hereditary, toxic and radiation lesions of nervous system, syringomyelia, vibratory disease, tumor of brain and spinal cord, epilepsy, neurosyphilis, cephalgias and angioneuroses.

IV. Contents of the lesson

This lecture generalizes and systesystematizes knowledge obtained in the course of previous lectures. It marks out the main aspects of ethiopathogenesis, clinical picture, diagnostics, differential diagnostics and treatment of vascular, hereditary lesions of nervous system, brain and spinal cord tumors, epilepsy. It controls, systematizes and generalizes knowledge, obtained in the course of independent extracurricular work on the topics "Acute and slow-progressing lesions of spinal blood flow", "Headaches. Migraine. Fascicular headache. Tension headache. Angioneuroses", "Exogenous neurointoxications. Botulism. Food poisonings", "Radiation lesions of nervous system. Vibratory disease", "Syringomyelia.Craniovertebral anomalies", "Neuroshyphilis", "Chromosome diseases and hereditary diseases of metabolism. Leukodystrophias", "Main groups of drugs, which are used in neurology".

V. Oral questions:

Vascular diseases:

– What is the classification of vascular diseases of brain?
– What variants of cerebral vascular crises are usually marked out?
– What are the symptoms of transitory ischemic attack?
– Give definition of transient lesions of brain blood flow.
– What are the types of strokes?
– What symptoms are typical for subarachnoid hemorrhage?
– Name main clinical signs of ischemic and hemorrhagic strokes.
– What additional examinations are necessary for a patient with a suspected stroke?
– What treatment is prescribed to patients with hemorrhagic and ischemic stroke?
– What are the clinical signs of spinal stroke?
– What is the classification of cephalgias?
– What are the modern views on pathogenesis of migraine?
– What are the clinical forms of migraine?
– What are the differences between Raynaud's diseases and Raynaud's syndrome?

Brain and spinal cord tumors:

– What is the classification of brain and spinal cord tumors?
– What syndromes are the signs of brain tumors?
– What examinations are prescribed to a patient with a suspected brain tumor?
– What are the changes of cerebrospinal fluid in case of brain tumor?
– What liquor-dynamic tests are carried out in case of brain tumor?

Epilepsy::

– What is the classification of epilepsy?
– What are the modern views on pathogenesis of epilepsy?
– What is epileptic seizure?

– What treatment is necessary for a patient with epileptic seizure?

– What additional examinations are necessary for a patient with epilepsy?

– What groups of antiepileptic drugs do you know?

– Characterize the main non-epileptic paroxysms.

Hereditary diseases with lesion of nervous system:

– What is the classification of hereditary diseases with lesion of nervous system?

– What is the main criterion of division of progressing muscular dystrophies into primary and secondary?

– What are the clinical signs of primary Erb-Rott's, Duchenne's, Landouzy-Dejerine's diseases?

– What are the clinical signs of Charcot-Marie's, Werding-Hoffmann's, Kugelberg-Welander's secondary amiotrophies?

– What additional examinations help to prove diagnosis of primary progressive muscular dystrophy?

– What treatment is prescribed to a patient with progressive muscular dystrophy?

– What forms of hepatocerebral dystrophy do you know?

– Name the main features of pathogenesis of hepatocerebral dystrophy.

– What treatment must be prescribed to a patient with hepatocerebral dystrophy?

– What are the main clinical signs of Huntington's chorea?

– What are the peculiarities of inheriting type of Huntington's chorea?

– Give clinical characteristics of Strumpell's disease.

– What signs help to differentiate Strumpell's disease with spinal form of multiple sclerosis?

– Give clinical characteristics of Friedreich's and Pierre-Marie's hereditary ataxias.

– What are the differences in inheriting type and topical diagnostics of lesions in case of Friedreich's and Pierre-Marie's hereditary ataxias?

– What are the clinical signs of Down's, Turner's, Klinefelter's chromosomal syndromes?

– What are the symptoms of leukodystrophies?

Exogenous intoxications. Radiation lesions of nervous system. Vibratory disease:

– What forms of exogenous intoxications do you know?

– Name the main clinical syndromes in case of exogenous intixications.

– What are the principles of exogenous neurointoxications therapy?

– Name the main clinical manifestations of botulism.

– What are the stages of lesion of nervous system in case of acute radiation sickness?

– What are the syndromes of lesion of nervous system in case of chronic radiation sickness?

– Name the stages of vibratory disease.

Syringomyelia. Craniovertebral anomalies:

– What structures are damaged in case of syringomyelia?

– What is syringobulbia?

– What symptoms are typical for syringomyelia?

– What course of segmentary and conducting symptoms is typical for syringomyelia?

– What craniovertebral anomalies do you know? What are their clinical manifestations?

Neurosyphilis:

– What is the classification of neurosyphilis?

– What are the symptoms of syphilitic meningitis?

– What are the changes in liquor in case of syphilitic meningitis?

– What are the manifestations of meningovascular neurosyphilis?

– What diseases is syphilitic gumma of brain or spinal cord differentiated with?

– Name the stages of tabes dorsalis. Give clinical characteristics of each stage.

Cephalgias and angioneuroses::

– What are the mechanisms of headache rise?

– What is the classification of headaches?

– What are the clinical signs of fascicular headache?

– Indicate pathogenesis, classification and clinical manifestations of migraine.

– What are the methods of migraine treatment?

– What is pathogenesis and diagnostical criteria of tension headache?

– What are the reasons, clinical manifestations and forms of angioneuroses?

– Describe clinical picture of Raynaud's disease..

– What are the differences between Raynaud's disease and Raynaud's syndrome?

– Describe signs of erythromelalgia.

Clinical pharmacology of drugs, which are used in neurology:

– What groups of drugs are used in neurology?

– Give characteristics of drugs with vasoactive action.

– Give characteristics of drugs with neuroprotective action

– What drugs are prescribed to patients with multiple sclerosis?

– What drugs are prescribed to patients with purulent meningitis?

– What drugs are prescribed to patients with vegetative paroxysm

Tests and typical tasks of II level

Tests and typical tasks of II level are presented in the manual "Collected test questions and tasks on nervous diseases for higher medical institutions" in parts "Vascular diseases of nervous system", "Tumors of nervous system. Syringomyelia",

“Traumas of nervous system. Epilepsy”, “Neurosyphilis”, “Hereditary diseases of nervous system”, “Neurointoxications”.

2. Materials of methodological provision of the main stage of the lecture

It’s necessary to use professional algorithms to form skills and abilities of examination of patients with vascular diseases, tumors, epilepsy, hereditary diseases of nervous system, presented in methodological guidelines for practice studies on these topics, and also approximate chart to define clinical syndromes on methodological guidelines to concluding lecture №2.

3. Control materials for the preparatory stage of the lecture

Atypical tasks of III level

№	Tasks	Standard of answer
1.	A patient with rheumatic carditis against the background of headaches and short-term loss of consciousness suddenly had a right-side hemiparesis, hemihypersthesia, hemianopsia. The skin is pale, cardiac fibrillation, CAT 120/80 millimeters of mercury. What disease can be suspected? Basin of what vessel is impaired? What examinations are necessary for the patient? What treatment must be prescribed?	Ischemic embolic stroke. Basin of left medial cerebral artery. ECG, ultrasound imaging of cerebral vessels and brain MRI, coagulogramma. Anticoagulants, vasoactive drugs, neuroprotectors, nootropics.
2.	A patient of 25 years old against the background of headache attacks with vomiting and dizziness had unsteadiness, progressing during 1 month. It led to his inability to walk. Has noticed worsening of	Infranentiorial tumor. In the cerebellum site. Craniography, investigation of eye-ground,

	eye-sight during this period. Keeps the head in unnatural position, has nistagmus, tonus of extremities is lowered, has intentional tremor while coordination tests. What diseases can be suspected? What is the localization of the process? What examinations must be carried out to make diagnosis more accurate. What drugs can be prescribed to make the patient's condition better?	echoencephalography, computer tomography or MRI of the brain. Dehydration drugs.
3.	Over the last months a patient has suffered from headaches, nausea, periodical twitchings of the left foot, that last several minutes and are sometimes transformed into spasms of the left side of the body without consciousness impairment. What is the name of such spasms? What is the name of patient's disease? What examinations are necessary to understand the character of the process better?	Jacksonian epilepsy. With Jacksonian march. Irritation of the upper part of the right precentral gyrus. Echoencephalography, computer tomography or MRI of the brain.
4.	Three times over the month a patient has had a feeling of unpleasant smell. After it he lost consciousness, fell down and hit his head. As a consequence he had spasms with biting his tongue and urinal loss. What is the name of patient's disease? How is the first symptom called? What diseases is it typical for? What examinations are necessary to confirm the diagnosis? What drugs must be prescribed?	Generalized spasm attack. Olfactory aura. Epilepsy with primary nidus in temporal part of the brain. Electroencephalography, echoencephalography, computer tomography or MRI of the brain. Carbamazepine,

		diphenylhydantoin, barbituzates.
5.	Since the age of three a boy has had weakness of muscles of pelvic girdle and thighs, pseudohypertrophy of gastrocnemius muscles, gait was impaired. His mother's brother had the same disease. What examination must be carried out. What treatment must be prescribed?	Duchenne's myodystrophy. Test of urine for of aminoacids, of blood – for creatine phosphikinase, electroencephalography, test of level of adenosine triphosphate and DNA in muscles. Protein drugs, anabolic hormones, ATP, vitamin drugs.
6.	While examination a patient aged 26 turned out to have cerebellar ataxia during the gait and coordination test, scanned speech, nistagmes, moderate central paraparesis, signs of dementia. The patienet's father has a similar disease. What pathology can be suspected? What disease must be differential diagnosis carried out with? What criteria will be used in case of brain MRI?	Pirre-Marie's ataxia. With multiple sclerosis. Brain MRI with veriventricular nidi of demyelinization in case of multiple sclerosis and their absence in case of hereditary ataxia

4. **Materials of students' self-preparation for the concluding lecture №4**

For their self-preparations students may use materials of the methodological guidelines for the practical lecture on the following topics: "Classification of vascular diseases of the brain. Initial manifestations of cerebral circulatory insufficiency. Slow-progressing and transient strokes", "Cerebral stroke", "Brain and spinal cord

tumors", "Epilepsy. Non-epileptic paroxysmal states", "Hereditary diseases of neuromuscular apparatus". Myasthenia and myasthenic syndromes", "Hereditary diseases with lesion of pyramidal, extrapyramidal and coordination systems" and also materials of methodologic guidelines for independent extracurricular work on topics "Acute and slow-progressing lesions of spinal blood flow", "Headaches. Migraine. Fascicular headache. Tension headache. Angioneuroses", "Exogenous neurointoxications. Botulism. Food poisonings", "Radiation lesions of nervous sytem. Vibratory disease", "Syringomyelia. Craniovertebral anomalies". "Neuroshyphilis", "Chromosomous diseases and hereditary diseases of metabolism. Leukodystrophies", "The main groups of drugs which are used in neurology".

It's necessary to revise:

- Classification, etiology, pathogenesis, clinical manifestations, principles of diagnostics and treatment of vascular diseases of nervous system;
- Classification, clinical manifestations, diagnostics and treatment principles of brain and spinal cord tumors;
- Etiopathogenesis, classification, clinical picture, diagnostics and treatment of epilepsy;
- Classification, pathogenesis, clinical manifestations, principles of diagnostics and treatment of hereditary diseases with lesion of nervous sytem, including chromosomous diseases and hereditary diseases of metabolism, leukodystrophies;
- Classification, clinical manifestations, principles of diagnostics and treatment of exogenous neurointoxications, botulism, food poisonings, radiation lesions of nervous system, vibratory disease;
- Etiopathogenesis, classification, clinical manifestations, principles of diagnostics and treatment of syringomyelia, craniovertebral anomalies;

–Classification, clinical manifestations, diagnostics and treatment principles of neurosyphilis;

–Reasons, rise mechanisms, clinical manifestations of cephalgias, agioneuroses;

–Clinical pharmacology of drugs which are used in neurology.

Curation. Presentation of case history

I. Why do we study it?

Carrying out of the neurological patient curation on one's own is necessary for a student to use his obtained theoretical knowledge, practical skills and abilities in order to be able on his own to examine the patient, establish the topical and clinical diagnoses, determine the tactics of treatment, give the recommendations to the patient and to record the case history.

II. Study goals:

To know:

6. the scheme of neurological patient examination (a =II);
7. the scheme of case history record (a =II);
8. ethiology, pathogenesis, clinical manifestations, diagnostics, treatment of patients with definite neurological pathologies (a =II);

To be able to:

1. carry out the patient's curation on one's own (a =III);
2. report about the examination results, indicate the pathology of neurological status, determine the main syndromes (a =III);
3. substantiate the topical and clinical diagnoses (a =III);
4. determine the tactics of treatment (a =III);
5. record the patient's case history (a =III);
6. present the patient's case history (a =III).

III. Educational goals:

1. To teach students to use their theoretical knowledge at patient's examination, to develop their clinical thinking.
2. To develop special observation, diligence at patient's examination.
3. To use the obtained earlier knowledge of deontology in neurology in practice
4. To teach students to record the documents thoroughly and professionally.

IV. Contents of the lesson

The day before students are given the detailed scheme of the neurological patient's examination and case history record. During the first lesson a student on his own but under the teacher's supervision carries out the neurological patient's curation, analyses the obtained data of neurological examination and supplementary methods of diagnostics. During the examination the students may use the professional algorithms of the examination of nervous system different functions and structures from the previous trainings methodical guidelines.

During the second lesson each student reports about the patient's examination, demonstrating the neurological pathology to the teacher and other students, substantiates the topical and clinical diagnoses, makes the plan of treatment. After this lesson the students should record the case histories on their own.
In the third lesson the teacher analyses the checked case histories, pays students' attention to their mistakes. The basic aspects of ethiopathogenesis, clinical picture and diagnostics used during the patients' curation are discussed. Special attention is paid to the substantiation of the topical and clinical diagnoses, and to the differential diagnosing. The prescribed treatment, its correctness and accordance, recommendations and prognosis are also thoroughly discussed. At the end of the lesson the teacher assesses the student's work – one mark is put for the case history record, another – for its presentation.

Scheme 1

Main topical neurological syndromes

Peripheral nervous system diseases	***Spinal cord diseases***	***Cerebral diseases***
- mononeurotic - polyneurotic - plexic - radicular	- posterior horn - anterior horn - lateral horn - anterior white commissure - lateral funiculus - posterior funiculus - hemisection of spinal cord [Brown-Séquard] - transversal section of spinal cord	- stem: a) alterative b) bulbar - intracapsular - thalamic - hypothalamic - extrapyramidal - pseudobulbar - cortex -meningeal

V. Oral questions:

- What is the algorithm of the neurological patient's curation?
- What is the algorithm of the neurological status examination?
- How to examine the superficial and deep types of sensitivity?
- How to examine the reflex-motor function?
- What assays to establish static and dynamic ataxia exist?
- How to investigate each cranial nerve's function?
- How to examine the vegetative nervous system?
- How to investigate the higher cortex functions?
- How to investigate the meningeal symptoms?
- How to carry out the differential diagnostics?

1. **Materials for the lesson basic stage methodic supply**

Professional algorithm for the neurological patient's curation

№	Tasks	Instructions	Notes

1	2	3	4
1.	To find out: - patient's complaints - disease anamnesis - life anamnesis	Analyzing the patient's complaints, first of all it's necessary to determine the main ones, to work them out in detail. To pay attention to the disease onset, its contributing factors, first signs and peculiarities of its course. To specify the provisional diagnosis, supplementary examination, its results; the treatment and its efficacy. To pay special attention to the presence of pathological heredity, relatives' health status, data on patient's birth and development, marital status, life and work conditions, old diseases and intoxications, their course.	The complaints should be collected very thoroughly and carefully. Remember, that correctly collected anamnesis helps to explain the objective examination data and to understand the localization and character of the pathological process.
2.	To carry out the examination: - of patient's general status - somatic examination - neurological examination	To examine all patient's systems (cardiovascular, gastrointestinal, pulmonary, urogenital, skeletal, skin etc.)	The algorithm and amount of examination are defined in the neurological patient's examination scheme. Be careful, carry out the complete neurological examination.
3.	To establish the accurate diagnosis	To carry out the patient's examination by the scheme, using the practical skills obtained during the previous lessons.	
4.	To analyze the supplementary patient's examination data	To analyze the complaints, anamnesis and clinical examination data. To define the basic syndrome or clinical constellation. To identify the degree of the nervous system affliction.	These data are given by the teacher
5.	To establish the provisional clinical diagnosis		The diagnosis has to be substantiated
6.	To carry out the differential diagnosing	Liquor, electrophysiological, X-ray examination methods, results of the blood test, urinalysis etc., results of other specialist' examination.	The list of diseases used for differential diagnosing is
7.			

8.	To establish the clinical diagnosis	Patient's complaints, anamnesis and objective examination data are taken into account. It's carried out by the comparison of patient's disease manifestations with the clinical picture of diseases having the same symptoms. To pay attention that it includes: 1) the main disease 2) the disease complications 3) the accompanying diseases	composed together with the teacher The clinical diagnosis is thoroughly substantiated. It should contain not only the disease name, but also ethiological, pathogenetic, morphological and functional components
9.	To administer the treatment		
10.	To write journals in the case history	Ethiology and pathogenesis of the disease have to be recorded in details in a separate chapter of the case history	To write down the prescriptions for the administered drugs in the case history
11.	To indicate the individual prognosis and the disease consequences of the definite patient and to give him recommendations	It's obligatory to substantiate the administered therapy (each medication or remedy separately).	It's obligatory to determine the dynamics of the neurological status
	To write out the epicrisis	The journals should contain data on dynamics of feelings and changes in the patient's objective status The prognosis should be defined concerning three questions: life prognosis, prognosis for complete recovery, workability prognosis. To indicate in details the treatment-and-prophylaxis recommendations for the examined patient. The epicrisis should contain all disease symptoms and examination supplementary methods data confirming the clinical diagnosis, the disease dynamics during treatment and its efficacy	In this chapter it's necessary to substantiate the established diagnosis and to demonstrate the treatment efficacy. To give recommendations to the patient

2. **Materials for the lesson final stage control**

Questions pattern for case history presentation

1. What main neurological syndrome was diagnosed in the patient?
2. Substantiate the topical diagnosis of the examined patient.
3. Carry out the differential diagnosing of the examined patient's disease and acute multiple encephalomyelitis, optic-chiasm arachnoiditis and spinal cord tumor (if the patient has cerebral-spinal form of the multiple sclerosis). What common disease signs do this patient and the above mentioned diseases demonstrate?
4. Substantiate the established clinical diagnosis. What data were taken into account to establish the disease form, the course type, stage and severity degree?
5. What is the examined patient's disease ethiology?
6. Indicate the peculiarities of the disease pathogenesis and complications.
7. Substantiate the administered treatment.
8. List the recommendations given to the patient.
9. Substantiate the disease course prognosis.

3. **Materials for the students' self-study methodic supply**

Approximate scheme for the students' independent activity on the theme "Curation. Presentation of case history"

Basic tasks	Indications
To revise the main topical neurological syndromes, their component signs and methods of diagnostics	To use the professional algorithms of investigation of nervous system different functions and structures from the previous lessons methodical guidelines
To learn: - the scheme of the neurological patient examination - the scheme of the examined patient's case history record	To learn all requirements for each chapter of case history record
To record the case history of the examined patient	To demonstrate completely and in details all chapters of the case history. To be able to substantiate the topical diagnosis, to carry out the differential diagnosing, to establish the accurate clinical diagnosis, to administer the effective treatment, and to record the case history students except study books should also use supplementary up-to-date scientific literature on this disease