THE MINISTRY OF HEALTH OF UKRAINE
ZAPORIZHZHIA STATE MEDICAL UNIVERSITY

Department of nervous diseases

GENERAL NEUROLOGY

MODULE 1

Teaching aid for classroom work
students of IV course II international Department of the higher educational institutions of III-IV level of accreditation

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Authors:

Kozyolkin O. A. – professor of Neurology, the Head of Department of Neurology;

Vizir I. V. – docent of Neurology, Department of Neurology;

Sikorskay M. V. - docent of Neurology, Department of Neurology.

Reviewers:

Sivolap V.V. - Head of the Department of propaedeutics Internal Medicine, Professor;

Ivanko A.G. - Head of the Department of propaedeutics of children's diseases, Professor.

Kozyolkin O. A.

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The textbook is designed for medical students enrolled in the specialty “General medicine” of English-language learming. In the manual given to methodological development for module 1 (topical diagnosis of lesions of the nervous system).

Methodical development for practical classes, where summarized the topic, questions to prepare, examples of solving test and situational tasks and tasks for independent solutions that greatly facilitates independent student work. Using the textbook students it is much easier to distinguish the clinical signs, combine them into syndromes, and on this basis to formulate topical diagnosis. This solved the goal – the development of clinical thinking by actively mastering the analytical system of diagnostic reasoning when solving clinical problems. The logic of clinical thinking of neurologists based on anatomical and physiological information about the nervous system in norm and in disturbances in its functions.

us, the present teaching aid prepared by the staff of the Department, will enhance the quality of student learning, improve the level of diagnosis of diseases of the nervous system.

PREFACE

The main aim of the course of nervous diseases is to educate students to the theoretical foundations of neuroscience, the methods of examination of neurological patient, the methodology of setting of neurologic diagnosis and policy making adequate treatment.

The objectives of this course are teaching students the ability to communicate with patients and their families by observing the ethical rules and history, skills of examination of the nervous system, principles of formulation of topical diagnosis, the integration of the results of additional studies in the setting of neurological diagnosis.
Handbook on General neurology (module 1) prepared in accordance with the model curricula for nervous diseases for students of the fourth course students, specialty “General medicine” in higher medical schools of III-IV levels of accreditation. The topics covered in practical classes, tailored to the peculiarities of examination of patients.

The test tasks, situational tasks, briefly provided the content of the topics. The list of references includes, as the principal monograph on neurology and contemporary sources that the publication in recent years. Described questions for oral questioning and self-monitoring students.

Contents

Theme 1. Main stages of development of neurological science.

The first researches of nervous (Hippocrates, Galen, Avicenna) Study diseases to neurology are in the universities of dark ages and Renaissance age. Organization of the first departments of neurology is in universities (Moscow, Kharkov, Saint Petersburg, and Kyiv). Domestic and foreign neurologic schools. Modern directions of development of neurology: differentiation of neurologic science (creation of separate centres and scientific subsections from the study of cerebrovascular, demyelinating diseases, epilepsy, pathology but other) and integration is with other sciences (somatoneurology, vertebroneurology).

Theme 2. Principles of structure and functioning of the nervous system. Functional unit of the nervous system is a neuron. Motive system. A picture is of reflex and reflex arc.

Main stages of philo- and ontogenesis of the nervous system.

Structural and functional unit of the nervous system.

Main anatomical departments of the nervous system: cerebral lobis, sybcortex nodes, brainstem, spinal cord, roots, spinal neuroganglions, plexus, peripheral nerves.

Functional unit of the nervous system is a neuron. Types of neurons, them functional meaning. Neuroglia, it functional meaning.

Autonomic nervous system, it sypersegmental and segmental part. A limbic-reticular complex.

Brain cortex. Localization of functions is in the brain cortex. A concept is about the functional systems.

Blood supply of cerebral and spinal brain. Cerebrospinal fluids.

The reflex and reflex arc, conditioned and unconditioned, of superficial and deep reflex. The motor system, extrapyramidal system and cerebellum. Exam of motor system.

Theme 3. Voluntary of movement, disturbance. Pyramid system. Cortico-nuclear and cortico-spinal ways. Symptoms of central and peripheral paresis's.

Voluntary of movement. Pyramid system. Central and peripheral motor neurons. Cortico-nuclear and cortico-spinal ways.

Symptoms of central (spastic) paralysis.

Pathophysiology hypertone of muscular, hyperreflexia, pathological reflexes, decline of abdominal reflexes.

Symptoms of peripheral (flassid) paralysis. Pathophysiology of atonia, areflexia, atrophy.

Paralysis, paresis's, monoplegia, paraplegia, hemiplegia, triplegia, tetraplegia.

Theme 4. Syndromes of defeat of motor way are on different levels.

A syndrome of motive disorders is at the defeat of motive way on different levels: precentral gyrys (syndromes of irritation and fall), radiate crown, internal capsule, brainstem (alternating paralyses), and different levels of spinal cord (upper cervical part, neck bulge, thoracic part, lumbar bulge, and cone), different levels peripheral motor neuron (anterior horn, anterior roots, nerve plexus, and peripheral nerves).

Theme 5. Extrapyramidal system and signs of its disturbances

Anatomic information: basal ganglia (n.lentiformis, n.caudatus, protection, sybthalamus), nucleus of brainstem (red nucleus, black substance, reticular nucleus). Interaction sybcortex ganglions are with the different departments of cerebral and spinal brain.

Physiology of the extrapyramidal system.

Biochemistry of the extrapyramidal system.

Syndromes the extrapyramidal system lesion: Parkinson's syndrome and syndrome of involuntary movements.

Akineto-rigidity syndrome, or syndrome of Parkinson's, him biochemical aspects. Main clinical displays of Parkinson's: bradykinesia, rigidity of muscles, trembling, flexed posture.

Differential diagnostic of plastic and spastic (elastic) hypetone pressure of muscle tone.

Hyperkinetic-hypotonic syndrome. Types of hyperkinesias: athetosis, chorea, hemiballism, tics. Muscular dystonia focal (blepharospasm, facial cramp, spastic of muscular of neck, dystonia of brush, dystonia of foot, torsion dystonia), segmentar, general.

Theme 6. Cerebellum, syndromes of defeat of cerebellum.

Anatomo-physiology features of cerebellum.

Interaction of cerebellum with different department's cerebral and spinal brain (homo- and heterolateralis). Afferent and efferent ways. Vermix and hemispheres of cerebellum. Functions of cerebellum: providing of equilibrium, co-ordination, synergism of motions, and regulation of muscular tone. Syndromes of defeat of cerebellum. Static and dynamic ataxia, asynergy, atony of muscles, intention tremor, adiadochcinesia, nystagmus, speech variants. Types of ataxias: (cerebellar, vestibular, sensitive, functional).

Theme 7. Sensitive system and symptoms of its defeat. Sorts and types of violation of sensation

A concept is about a reception. Types of receptors. Exteroceptive, proprioceptive, interoceptive sensitiveness. Clinical classification of sensitivity. Pathways of sensitiveness. Examination of sensitivity.

Symptoms sensory disorders: anaesthesia, hypesthesia, hypersthesia, hyperpathia, dysesthesia. Synesthesia, disorders, polyesthesia, paresthesia. Classification of pain.

Types of sensory violations: mononeuritic, polyneuritic, radicular, dorsal horn, conductive (at the defeat of sensory ways at the level of spinal cord, medial loop, thalamus, internal capsule); cortical type (syndromes of irritation and fall). Syndrome of half-transversal defeat of spinal cord (syndrome of Brown-Sequard).

Theme 9. Pathology of olfactory and visual analysers'. Syndromes of defeat of nerves oculomotorius.

And I pair - olfactory nerve (sensible nerve): main anatomo-physiology features.

Olfactory analyser: first neuron (ganglia mews of mucus shell of nose); second neuron (olfactory bulbs, olfactory way); third neuron (primary sybcortex olfactory centres are an olfactory triangle, septum pelicuda, front perforate substance); cortical olfactory centre (medial surface of temporal lobe). Research of olfactory analysers.

Syndromes of defeat are a hyposmia, anosmia, hyperosmium, olfactory hallucinatory.

II pair is a visual nerve (sensible nerve).

Anatomo-physiology features: departments of – peripheral (roots and cones, bipolar mews, ganglia cells, nerve, chiasma, visual way), central (lateral geniculate body, upper hillocks of lamina quadrigemina, pillow of thalamus (subcortical centers), pinches of Gratsiole, spur sulcus of occipital lobe (cortical centre to the analyzer).

Symptoms of defeat: amavrosis, ambliopia, homonimus and heteronimus hemianopsia (binatal, bitemporal), visual hallucination. Changes of disk of visual nerve (ophalmosconia).

III, IV, VI pair – oculomotor (mixed), trochlear abducens (motive) nerves: localization nucleus, exit of roots from a skull, innervation of peripheral.

Symptoms of defeat: ptosis, cross-eye, diplopia, paralisis convergention and accommodation, ophthalmoplegia (partial and complete); dilatation of the pupil: miosis, midriasis, anisocoria, reflex light, syndrome of Argyll-Robertson.

Theme 10. Trigeminal, facial and vestibule-coxlearis nerves and symptoms of their defeat.

The V pair is a trigeminal (mixed): nucleus of nerve, exit of roots on the basis of brain, skull, and branch of nerve and region of their innervation (ophtralmic nerve, supramaxillaris, mandibular nerves).

Symptoms of defeat of the system of trigeminal: defeat of branches of trigeminal (shooting pains, violation of all types of sensitiveness in the area of innervations of the proper branches, loss are of corneal and mandibular reflex; paresis of masseters; defeat of node of trigeminal (herpetic rashes, pains, violations of all types of sensitiveness, are on the half of face, decline of corneal, mandibular reflexes); a defeat of sensible nucleus of trigeminal is nucleus of spinal way (segmentar is a dissociation type: violation of pain and temperature sensitiveness on the half of face); defeat to thalamus (hemianesthesia of all types of sensitiveness, thalamic pains on an opposite side from a focus; defeat of bark of postcentral gyrus.

The VII pair is a facial nerve (mixed).

Anatomo-physiology features; branches of nerve (large stony nerve, stapedial nerve, horda timpani, facial nerve).

Symptoms of defeat of facial nerve: peripheral paresis of mimic muscles (a defeat of nerve is in a channel, ponto-cerebellum angle, brain stem (alternate syndromes of brain stem) and central paresis of mimic muscles (internal capsule; lower departments of precentral gyrus).

VIII pair – vestibule-cochlear nerve (sensible).

Anatomo-physiology feature, cochlear and vestibular nerves. Pathology vestibule-cochlear: defeat of sound perception (disorder of ear is on thin tones), defeat of sound conductivity (disorder of ear is on deep tones); defeat of vestibular part (dizziness, nystagmus, unbalance, co-ordination of movement, vegetative violations, defeats of cortex of temporal pole (hallucionation of hearing).

Theme 11. Pathology IX – XII pair of cranial nerves. Bulbar and pseudobulbar syndromes.

The IX pair is a glossopharyngeal nerve (mixed);

The X pair is a vagus (mixed);

The XI pair is an additional nerve (motive);

The XII pair is a hypoglossus (motive).

Anatomo – physiology feature. Localization of nucleus is in a medulla oblongata. Bulbar and pseudobulbar syndromes: general signs (dysphagia, dysphonia, dysartria) and differences (fibrilation and atrophy of muscles of tongue, reflexes of oral automatism, forced laughter, weeping). Defeat of innervation of muscles of tongue is peripheral and central paresis's.

Theme 12. Pathology of the vegetative nervous system.

Anatomo- physiology feature and functions of the vegetative nervous system:

Segmentar department of the vegetative nervous system.

Sympathetic part: lateral horns of spinal cord, sympathetic trunk, ganglions. Parasympathetic part: craniobulbar, sacral (sacrum) departments.

Suprasegmental department of vegetative functions: hypothalamus, limbic system, reticular structure of brainstem.

Methods of research of vegetative functions.

Syndromes of defeat of suprasegmental department of the vegetative nervous system. Syndrome of vegetative dystonia. Permanent and paroxysmal disorders. Hypothalamic syndrome.

Vegetative vascular paroxysm: sympathetic-adrenal, vago-insular mixed.

Syndrome of defeat of the segmentar vegetative nervous system. Defeat of brainstem, lateral horns of spinal cord, neuroganglions of boundary trunk, plexus, nerves.

Claude-Bernard-Horner's syndrome. Visceral symptoms. The of level of regulation function of pelvic organs and their disorders.

Theme 13. Localization of functions is in a cortex. Syndromes of defeats. Neurolymph, its changes. Meningeal syndrome.

Structure of large hemispheres of brain.

Functions of localization is in a cortex. Dynamic localization of functions. Motor and sensory centres are in cortex of brain.

The gnosis. Types violation of functions of gnosis (agnosia): visual, smell, taste, auditory, stereoagnosis, autognosia, anosognosia.

Praxis. Types of apraxia: constructional, ideational, motor or kinetic.

Speech. Disorders of speech: motor, sensory aphasia, amnestic aphasia.

Syndromes of defeat of different lobes: frontal, temporal, parietal, occipital.

Syndromes of irritative brain cortex.

Syndromes of defeat of right and left hemispheres.

Syndrome of persistent vegetative state.

Locked in syndrome.

Syndrome of brain defeat.

Cerebrospinal fluid.

Shells of brain and spinal brain. Characteristics of normal CSF and changes: meningitis, tumours, hemorragic stroke, and tuberculosis. CSF changes manifest as: cellular-protein, protein-cellular dissociations, pleocitosis.

Meningeal syndroms: 1) general cerebral sings : headache, vomiting, nausea, general hyperesthesia, hallucination, prostration, photophobia, changes of consciousness, psychomotor agigation and seizures; 2) neck stiffness, Kernig sign, Brudzinski signs (upper, Lessage syndrome (in children), middle and lower ones).

Theme 14. Functional diagnostics of nervous diseases.

X-ray (radiography) (skull, spinal cord).

Contrast X-ray inspections (myelography, angiography, ventriculography).

Ultrasonography.

Electrophysiology investigation (EEG, EMG and other).

Methods of neurovisualisation (computerised tomography scanning (CT), magnetic resonance imaging (MRI), MR-angiography).

Theme: «Principles of structure functioning of the nervous system. Functional unit of the nervous system is a neuron. Motive system. Concept of reflex and reflex arc»

I. Actuality of theme:

The nervous system has the protracted way of development. Evolutional studies about the nervous system in a norm and pathology necessity for understanding of many symptoms which are observed in the clinic of neurology. Reflex principle of work of the nervous system is very important, as reflex is a reaction of organism in reply to an irritation, carried out and controlled by a central nervous system.

The nervous system provides work of cell, tissue and organs, binds an organism to the outer world. Due to the nervous system for a man carried out, memorizing.

II. Educational aims

A student must **know**:

- Basic stages of onto- and phylogenesis of the nervous system.
- Structural and functional unit of the nervous system.
- Main anatomic departments of the nervous system, brain hemisphere, radix, neuroganglions of spinal, plexus, peripheral nerves.
- Functional unit of the nervous system – neuron. Types of neurons, them functional importance. Neuroglia, it functional importance.
- Vegetative nervous system, it suprasegmental and segmental departments. Limbic-reticular complex.
- Cerebrum cortex. Localization of functions is in cortex hemispheres. A concept is about the functional system.
- Blood supplying of the brain and spinal cord. CSF.
- The reflex and reflex arc, conditioned and unconditioned reflexes.
- Anatomic features and neurophysiology of the voluntary movement, extrapyramidal system.

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A student must **be able:**

- Examination of patients is with movement defeat.
- To analyse the results of clinical and functional methods of examination.
- To appoint treatment to the patients with motive violations.

III. Educator aims

Mastering of priority of domestic scientists students is in the study of physiology and pathology of the nervous system. Education of modern clinical thought. The diagnostic approach is near patients with neurological violations.

IV. Interdisciplinary integration

Discipline	To know	Able
Previous disciplines		
Normal anatomy	Anatomy of the nervous system.	Scheme to represent the structure of the nervous system
Normal physiology	Functions of the nervous system.	Scheme to represent reflex arcs.
Histology	Histological structure of the nervous system.	Scheme to represent basic structurally functional unit of the nervous system.
Biochemistry	Basic neurotransmitters.	To explain influence of neurotransmitters on the nervous system.
Pharmacology	Mechanism of action of different pharmaceutic preparations.	To conduct pharmacological diagnostic tests.
Propedeutics of internal illnesses	Methods of inspection of organs and systems of organism.	To conduct the inspection of organs and systems.
Next disciplines (that provided)		
Cardiology	Mechanism of the vegetative adjusting cardiac activity, vessels.	To find out vegetative violations from the side of the cardiac system.
Surgery	Mechanism of the vegetative adjusting of activity of vessels of extremities.	To discover vegetative trophic violation in extremities.
Endocrinology	Hypothalamo-hypophyseal adjusting of endocrine glands.	To find out neuroendocrinal syndromes.
Ophthalmology	Innervations of eye	To find out the syndromes of defeat of innervations of eye.

Otolaryngology	Innervations of ear, nasophryngeal.	To find out the syndromes of defeat of ear, nasophryngeal.
Intra object integration		
Disease of central nervous system	Signs of central paralysis Signs of defeat of pyramid patway are on different levels.	To differentiate with a peripheral paralysis. To differentiate the defeat of pyramid patway on different levels.
Disease of the peripheral nervous system	Signs of peripheral paralysis. Even shorting of skin, tendon and periosteal reflexes.	To differentiate with the central defeat of motive neuron. To investigate deep and skin reflexes.
Cerebellum, disease of cerebellum	Examine of tests coordinates test.	To investigate cerebellum system.

V. Table of contents of theme of employment

Evolutional stages of development of the nervous system

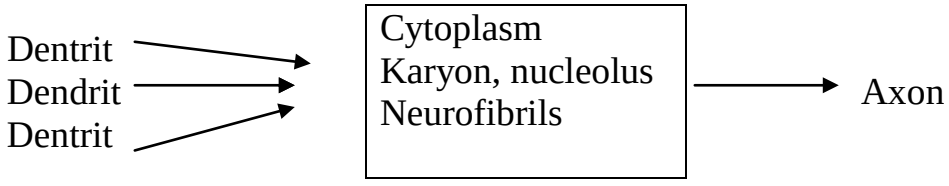
I. Asynaptic is a hydra.
II. Synaptic (ganglion) – vermitoid.
III. Tubular spinal.

Morphological stages of evolution of the nervous system

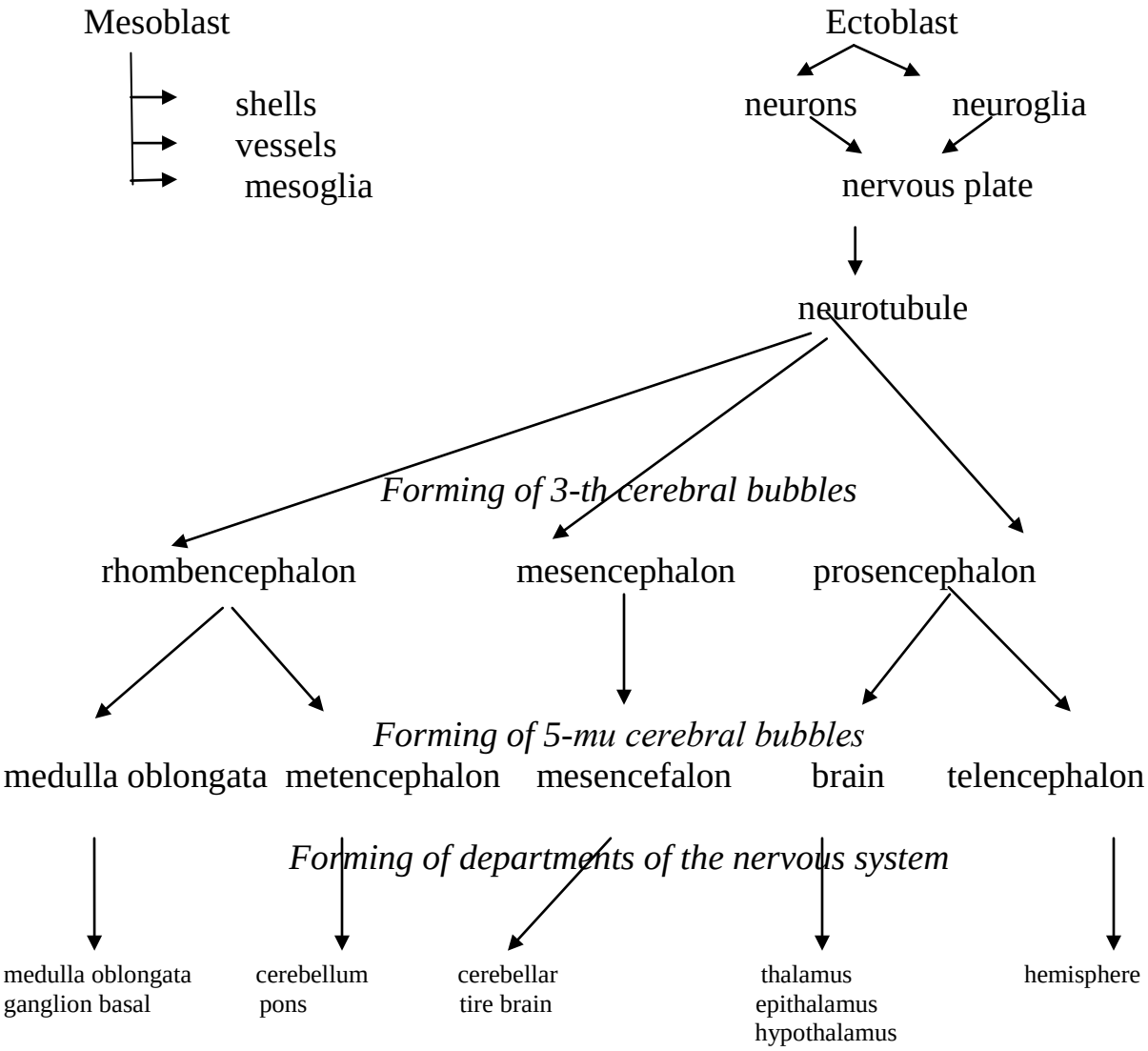
I. Centralization
II. Cephalisation
III. Corticalization

Structure and functional unit of the nervous system.

Neuron



Basic stages of philo- and ontogenesis of the nervous system.



Nervous fibres

Myelination
axial cylinder
myelination shell
neurolema
basal membrane
transmission of impulse of 60 m/c

Inmyelination
axial cylinder
neurolema
basal membrane
transmission of impulse of 1-2 m/c

Function of neuron

- ✓ Reception and preparation
- ✓ Conductivity of information is to other cells

- ✓ Trophic

Types of neurons

Afferent (sensitive) – pass impulses from sense-organs in a spinal and brain.
Associative (inserted) – carry out connection between sensible and motive neurons.
Efferent (motive) – pass an impulse from a spinal and cerebral cord to the muscles and inner organs.

Neuroglia

Except for neurons there are glial cells (astrocytes, oligodedritis, microgliacities) which in 10-15 times more neurons and which form a neuroglia.
Functional maning of neuroglia:

1. Reference
2. Trophic
3. Secretory
4. Protective

*Main anatomic department of the nervous system***.**

4 level anatomic departments of the nervous system.

1. Reception effector department.
   receptors of a skin analyzer

effector → motor
effector → secretory

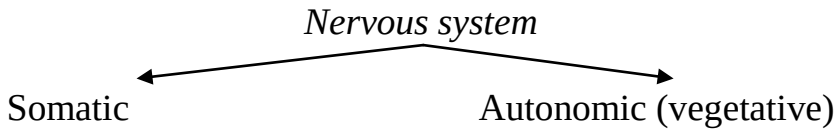
2. Segmentar department of spinal cord and cerebrum:
   - anterior and dorsal horns of spinal cord
   - anterior and dorsal roots
   - nucleus of cranial nerves and their roots
3. Integration department of subcortex.
   - basal nucleus
   - thalamus

4. Brain cortex

Nervous system

Central
- Cerebrum and spinal brain

Peripheral
- Nervous cell process
- Peripheral nerve
- Ganglion, plexus



Cerebrum

1. Brain have a two hemispheres and includes:
   - mantle (pallidum) is a brain cortex and white matter of hemisphere
   - subcortex basal nucleus (pars basalis telencephali):
     - nucleus caudatus
     - nucleus lentiformis
     - claustrum
     - corpus amygdaloideum
   - capsula interna
   - olfactory brain (rhinencephalon)
     - olfactory bulb
     - olfactory tract
     - medialand lateral olfactory gyrus
     - olfactory triangle
     - hippocampus
2. Inter brain – diencephalon:
   - a upper department is an epithalamus
   - a middle department is thalamus
   - a lower department is a hypothalamus
   - a dorsal department is meththalamus
3. Brain:
   - mesencephalon.
     - peduncli – pedunculi cerebri
     - lamina tecti
     - roots III and IV pair of cranial nerves
     - nucleus of Darshkevich's
     - nucleus of Kahayan is an intermediate nucleus
     - nucleus ruber
     - substance nigra
     - tectum mesencephali
     - tractus tectospinalis
     - tractus tectobulbaris
   - pons:
     - nucleus VI, VII, VIII pair of cranial nerves

- nucleus V pair of cranial nerves
- lemniscus medialis
- lemniscus lateralis
- arteries front spinal patway (tractus spinocerebellaris anterior) of cerebellum
- medial longitudinal fillet
- dorsal longitudinal fillet
- round fillet

– medulla oblongata:

- fissura mediana anterior
- pyramides
- decussation of pyramids (decussatio pyramidum)
- arteries (sulcus lateralis) (the front roots of spinal cord and roots of hypoglossus of XII pair of cranial nerves)
- accessory (sulcus lateralis posterior) (the counterfoils of wandering, glossopharyngeal and accessory nerves go out from it)
- olive (oliva)
- focca rhomboid
- band gracile et cuneatum
- fasciculus longitudinalis posterior
- fasciculus longitudinalis medialis

- reticular structure.
- gray substance of bond
- nucleus of lower band

4. A cerebellum (cerebellum) is divided on:
   - body
     - 2 hemispheres – hemipherum cerebelli
     - 3 pair of pedunculi cerebelli
     - vermis cerebelli
   - flocculus-nodulus
   - nucleus of cerebellum
     - nucleus dentatus
     - nucleus emboliformis
     - nucleus globosus

Spinal cord

Segments of spinal cord:

- 8 cervical
- 12 thoracic
- 5 lumbar

- 5 sacral
- 1-3 coccygeal

Bulge of spinal cord:

- cervical enlargements (C_5-Th_1)
- lumbar enlargements (L_1-S_2)

A segment of spinal cord is an area of spinal cord with two pair of spinal roots: ventral (motive, efferent) and dorsal (sensory, afferent).

Spinal cord

Grey substance	*White substance*
- body of neurons	- myelination of fibre
- elements of glial	- afferent system
- nervous fibres	- efferent system

Spinal cord has 31 pairs of mixed spinal nervers that consist of ventral of dorsal roots.

Plexus:

- ✓ cervical are anterior branches C_1-C_4 of segments
- ✓ humeral are anterior branches of C_5-Th_2 of segments
- ✓ lumbar are anterior branches of L_1-L_3, partial Th_{12} and L_4 of segments
- ✓ sacral are anterior branches of L_5-S_2, partial L_4 and S_3 of segments

Peripheral nerves – in majorities mixed, consist of bund of myelition and amyelition motive, sensible and vegetative nervous fibres.

Vegetative nervous system

Supsegmental	*Segmental*
limbic part	<u>Sympathetic nervous system</u>
hypothalamus	lateral horns of spinal cord (C_8-L_2)
reticular structure	sympathetic nodus
	prevertebral ganglia
	<u>Parasympathetic nervous system</u>
	cranio-bulbar part
	sacral-bulbar part
	peripheral ganglia

Limbic-reticular complex

Cortex of posterior surfase of frontal lobe.

Smell brain (bulbus olfactorius, tractus olfactorius)/

Hippocampus – dentate and cinguli gyrus, septum pellucidum anterior nucleus of thalamus, hypothalamus.

Corpus amygdaloid.

Function: emotional reaction, synthesis of all types of gyrus sensation, cooperation of autonomic, visceral system, level of consciousness, memory, motive and psychical activity, speech, state sleep, insomnia.

Cerebral cortex

1. New cortex (neocortex) – 96%

Occipital, lower parietal, upper parietal, precentral gyrus, frontal, temporal, limbic part/

Six layers of the neocortex:

I - molecular layer
II – external granular
III – external pyramidal layer
IV – internal granular layer
V – internal pyramidal layer
VI – multiform layer

2. Paleocortex.

Olfactory tubercle, septum pellucidum, amygdoloid parts.

3. Archiocortex.

Amnonov horn, dentate gyrus, taenia tecta.

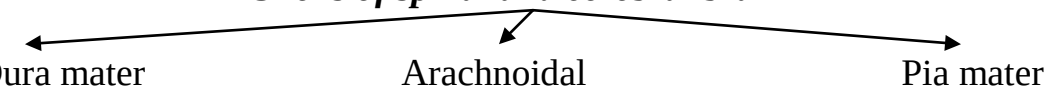
Paleocortex and archiocortex – 4%.

Field (for Brodmans) - 11 cortex of bark consist of 52 fields, which differ cellular composition, structure and executable functions.

Functions and types of cortex

I type is a 1 alarm system.
II type is a 2 alarm system.
III type is purposefulness of actions, planning prospect.

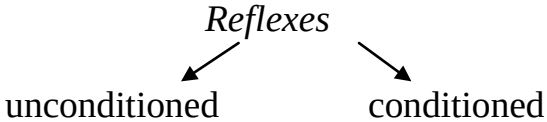
Shells of spinal and cerebral brain



Cerebrospinal fluid

The amount 50-100 ml for children, 100-150 ml for adults.
Total renovation 3-7 one time per days.
Functions are mechanical defence of brain, regulation of intracranial pressure, excretory and transport, immunologic barrier.

The reflex – is a reaction of organism to various outside and inside effects it is provided by nervous system.



Scheme of knee jerk arch

1. Receptors of nervous – muscular cords.
2. Dorsal root ganglion of spinal cord.
3. L-motoneuron.
4. The central neuron of Pyramidal tract.

Unconditioned reflexes are divided on:

1. Superficial and deep.
2. Simple and complex.
3. Proprioceptive (strtch, periostel, joint).
4. Exteroceptive (dermal, front mucose membrane).
5. Interoceptive (from mucose membrane of internal organ for example urination in case of internal sphincter irritation).

Even shorting of reflex arcs

The group of reflex	*Reflex*	*Reflex arch nerves*	*Level of shorting segments*
Syperficial, from mucose membrane	Corneal	Trigeminal and facial nerve (VII, V)	Medula oblongata, pons
	Conjunctivall	Fasial, trigemenal	Pons of brain
	Pharyngeal	Glossopharyngeal and vagus nerve (X, XII).	Medula oblongata
Superficial, dermal	Abdominal: upper middle lover	Intercostals nerves Th_7-Th_8 Th_9-Th_{10} Th_{11}-Th_{12}	Thoracal segments of spinal cord
	Cremasteric	Genitofemorales nerves	Segments of spinal cord of L_1-L_2
	Plantar	Sciatic nerves	Segments of spinal cord of L_5-S_1
	Anal	Anococcygei nerves	Segments of spinal cord of S_4-S_5
Deep, tendon reflexes	Biceps jerk	Musculocutaneus nerves	Segments of spinal cord of C_5-C_6
	Triceps jerk	Radial nerves	Segments of spinal cord of C_6-C_8
	Knee jerk	Femoralis nerves	Segments of spinal cord of L_2-L_4
	Ankle jerk	Tibialis nerves	Segments of spinal cord of S_1-S_2

Deep, periosteal reflexes	Superciliary	Facial nerves	Pons of brain
	Supinator jerk (corporadial)	Radial nerve	Segments of spinal cord of C_6-C_7
	Scapulo-humeral	Subscapular nerve	Segments of spinal cord of C_5-C_6
	Jaw jerk (mendibulas, chin masseter)	Trigeminal nerve (V), mandibular nerve (sensory and motor)	Medula oblongata, pons

Movement

Volutary:
acts of motive conduct
carry out of cortex brain
extrapiramidal system, spinal cord

Passive:
simplex automatic motive
(carry out segmentary parts
of spinal cord)

Pyramidal system

Pyramid tract

Central neuron
Betz cells and axons

Peripheral neuron
Axons of arterior horns, motor nucleus and roots of cranial neurons.

Pyramid tract
(motor way)

Cortico spinalis (to spinal cord)

Functions of pyramidal system control of motor function

Examination of motor system

1. Inspection, palpation, appearance.
2. Muscle tone, power.
3. Examination of reflexes: physiological, pathologic (flexing and extensing), oral pathological reflex.
4. Examination of coordination of movement.

VI. Plan and organization of structure of employments.

№	Basic stages of employment, their function and content	Educational aims are in the levels of mastering	Methods of control and studies	Materials of the methodical providing	Time
	I. Preparatory stage				
1. 2. 3.	Organization of employment Raising of educational aims and motivations Control initial level of knowledges, skills abilities: 1). Basic stages of onto- and phylogenesis of the nervous system 2). Functional unit of the nervous system 3). Main anatomic departments of the nervous system 4). Vegetative nervous system 5). Brain cortex 6). Perfusion cerebral and spinal brain 7). Reflex and arc reflex.	I II II II	Individual questioning; test control of the II level; decision of typical tasks of the II level	Academic of magazine. See the „Educational aims” „Actual of theme Methodical developments Tables, pictures, plaster casts, questions for the verbal questioning, tests of the II level, typical tasks of the II level	1 1 10
	II. Basic stage				
	Forming of professional skills and abilities: 1). To collect anamnesis of disease 2). To capture the method of the use of neurological hammer at the inspection of patient 3). Acquaintance with the method of	III III	Methods of forming of skills: the professional training is near a bed sick	Algorithms are for forming of practical skills. Methodical developments. Neurological hammers. Tables.	30

	leadthrough of lumbal puncher 4). Research of tendon and joins reflexes 5). Research of skin reflexes 6). Research of reflexes is from mucous membranes 7). Research of passive and active motions 8). Research of muscular tone. *Able:* 1). To appoint the plan of inspection sick with the defeats of the nervous system 2). To conduct differential diagnostics between the defeats of different departments of the nervous system 3). To conduct differential diagnostics of CSF at different pathology 4). To define a topic diagnosis and draw up a plan of subsequent inspection of patient.	III III III III III III III	Methods of forming of abilities: the professional training is in the decision of offtype clinical situatioonal tasks of III level	Algorithms for forming of abilities. Patients. History case Situational offtype task. Imitation games. Information lumbal puncher	
III. Final stage					
	Results of employment (theoretical, practical, organizational). Home task (basic and additional literature is on the topic).	III	Methods of control of skills: individual control of practical skills and their results. Analysis and estimation of clinical job, decision of tests, tasks performances	Equipment Results clinical inspection. Task of the III level Test tasks of the III level	2 1

VII. Materials of the methodical providing of employment.

1. Materials of control for the preparatory stage of employment.

A question is for the verbal questioning.

- What main stages of philo- and ontogenesis?
- What main anatomical departments of the nervous system?
- What educations do enter in the complement of, middle, intermediate and eventual metencephal?
- What educations does the peripheral nervous system consist of?
- What segment of spinal cord?
- What do exist bulge of spinal cord, which them functional value?
- What departments of the vegetative nervous system do select?
- What limbico-reticular complex and his functions?
- What are the shells of spinal cord?
- CSF, its composition
- What is the reflex?
- What structure of reflex arc (simple, complex)?
- What superficial reflexes do you know? Where are levels of close?
- What deep reflexes do you know? Where are levels of close?

Materials are for test control (I and):

1. The increase of tendon reflexes. What is the lesion?
   A. *Central neuron.
   B. Peripheral motor neurons.
   C. Cerebellum.
   D. Vegetative system.
   E. Sensory way.

2. The patient has low ankle reflex. What is the lesion?
   A. *Pyramidal way.
   B. Sensory way.
   C. Defeat of spinal cord, level C_5.
   D. Cerebellum.
   E. Vegetative system.

3. For what disease characteristic analysis of CSF: colour – transparency, cytosis: 0-1 cell. in 1 mm^3, albumen - 0,33g/l, sugar - 2,8 mmol/l, chlorides – 119ммоль/л, a bensidine test is negative.
   A. *Ischemic stroke.
   B. Haemorrhage.
   C. Serior meningitis.
   D. Purulent meningitis.
   E. Tuberculous meningitis.

Materials are for test control (IIa)

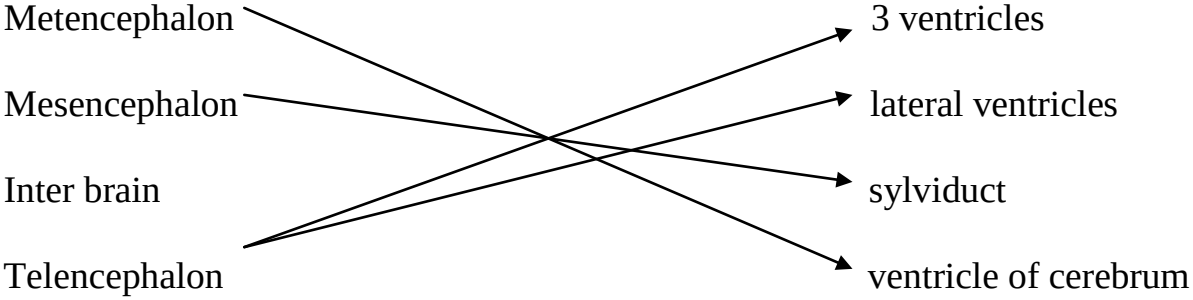
Test1 1 - is a test with a few variants of answers.

1. What signs of central paralysis?
A. Tendon deep reflexes are increased.
B. Abdominal reflexes absent.
C. Muscular atrophy.
D. Fasticulation twitches.
E. Spastic hypertonia.
Answer: A, B

3. For a hemorrhagic stroke there is a characteristic presence in CSF:
A. Erythrocytes.
B. Decreased of chlorides.
C. Bensidine test of positive.
D. Increased pressure of CSF.
E. Increased of sugar.
Answer: A, C

Test 2 – on finding of between's by the elements of information

What departments of brain is ventricular system formed from as a result philo- and to ontogenesis?



Test 3 - is a test which foresees determination of correct sequence of executions in the set situation.

Name the sequence of method of research of the motive system.
1. Determination of muscular tone.
2. Examination of reflexes.
3. To define the volumes of active and passive motions.
4. Review, palpation, measuring of muscles.
5. Determination of muscular force.
Answer: 4,3,5,1,2.

Test 4 is a test on a substitution or with an answer which is independently constructed.

Name the basic signs of central paralysis.

1.
2.
3.
4.

5.
6.
7.
8.

Answer:

- A decline of force is with the loss of thin motions.
- Spastic increase of muscular tone.
- Increase of deep reflexes.
- Decline or loss superficial reflexes (abdominal, sole).
- Pathological reflexes present.
- Protective reflexes.
- Pathological motions of concord.
- Absence of reaction of regeneration.

Typical tasks (II):

For a patient, after the carried trauma of cranial, gradually a constraint and slowness of motions developed in a right arm and leg, trembling of hand appeared at peace on the type of «rolling» of pills.
To define:

- Localization of pathological process

(Extrapyramidal system)

A patient as a result of development of extramedullar tumour of spinal cord has central paresis of right lower extremity with violation of deep sensitiveness from Th10 of segment right. On the left the decline of pain and temperature sensitiveness conductive tape from Th12 of segment.
To define:

- Localization of pathologic focus
- Tactic of conduct

(A spinal cord is a level of Th12)

2. Materials of the methodical providing are for the basic stage of employment. Professional algorithm of forming of practical skills and abilities

№	Task	Pointing	Notes
1	An inspection of patients is with the different defeats of the nervous system.	To execute in such sequence: 1) Acquisition complaints and anamnesis of patient. 2) Examination review of patient. 3) To define symmetry of tendon reflexes and arthral reflexes. 4) To investigate reflexes from mucous membranes.	- at external review will pay regard to muscles of extremities, volume of active and passive motions. - to define or there is not atrophy, fibril and fascicular twitches. Hypertone:

		5) Research of clonus feet and knee cups. 6) Measurement of volume of extremities by a centimetre. 7) Research of muscles tone.	• spastic • plastic. Research of electro-excitability. An acquaintance is with bases of electromyography
2	To set clinical and topic diagnosis, to define the plan of treatment	On the basis of found out symptoms to ground a topic diagnosis.	

Differential signs of peripheral and central paralysis.

Sign	**Type of paralysis**	
	Peripheral	**Central**
The localization of paralysis	Local	Diffuse
Muscular atrophy	Present	Atrophy is not
Muscular tone	Hypotonia	Hypertonia (symptom of «well-knit knife»
Deep reflexes	All unconditional reflexes are decreased or absent	Tendon deep reflexes are increased, superficial skin reflexes are decreased or absent
Clonus	Absent	Present
Pathological reflexes	Absent	Present
Protective reflexes	Absent	Present
Pathological synkinesiss	Absent	Present
Reaction of muscular degeneration	Present	Absent

Research methods		
Appearance	**Clinical tests**	**Instrumental methods**
Muscular atrophy, hypertrophy and pseudohypertrophy	Investigate of movement	Dynamometers *Centimetres*
Fibrillation and fascicular jerk	Investigate muscular tone	EMG
Investigate of movement	Test of Barre's, investigate of walking	EMG
Presence of paresises and paralysis	Test of Barre's, pathology reflex, investigate reflex	
Presence of hyperkinesias	Test of coordination	

3. Materials of control for the final stage of employment.

Offtype tasks (level III)

The patient has peripheral paralysis of upper extremities, spastic paralysis of lower extremities, violation of superficial types of sensitiveness below than clavicula on an explorer type. CSF: protein-cellular dissociation, red colour.
Will define:
- Level of defeat of spinal cord.
- Clinical diagnosis.
- Plan of approach for treatment

(Level of defeat of C5-Th2)

The patient has chilled, increased temperature of body, and appeared to 39°C. There was feeling of crawl of ants on the back and feet, increasing weakness and lower extremity, pelvic defeat. Examination a lower spastic paraplegia, fall of all types of sensitiveness in feet and in the underbody of trunk below than belly-button.
Will define:
- Level of defeat of spinal cord.
- Clinical diagnosis.

(Level of defeat of Th10, myelities of lower thoracic region)

Theme: „Pyramid system. Central and peripheral paralyses”

I. Actuality of theme

A theme which is studied is the important section of neurology. Not only neurologists but also doctors of other specialities meet with pareses of muscles, because paresis’s are in the case of saccharine diabetes, alcoholism, traumas, infectious and other diseases. a doctor of general type is under an obligation to be able to find out paresis’s and paralyses, able to recognize their character, that is needed for timely diagnostics of disease.

II. Educational aims

A student must **know**:

- Structure and motor of motive way (a=II).
- Functions of the pyramid system (a=II).
- Signs of peripheral and central paralyses (a=II).
- Mechanisms of providing of muscular tone (a=II).

Practical skills:

- Examination volume of passive and active motions in the joints of extremities (a=III).
- To investigate force of muscles in distal and proximal departments of extremities (a=III).
- To investigate the state of tone of muscles of extremities (a=III).
- To find out the presence of muscular atrophy, oligotrophy, fasciculation and fibrillar of jerks in muscles

A student must **be able:**

- On the basis of found out pathological symptoms to set character of paralysis of muscles (a=III).

III. Educate aims

To form for students an attentiveness and care at research of motive function for patients. To educate sensitive, humane attitude toward patients with paresis’s and paralyses. To develop psychological skills of socializing with patients which have motive disorders?

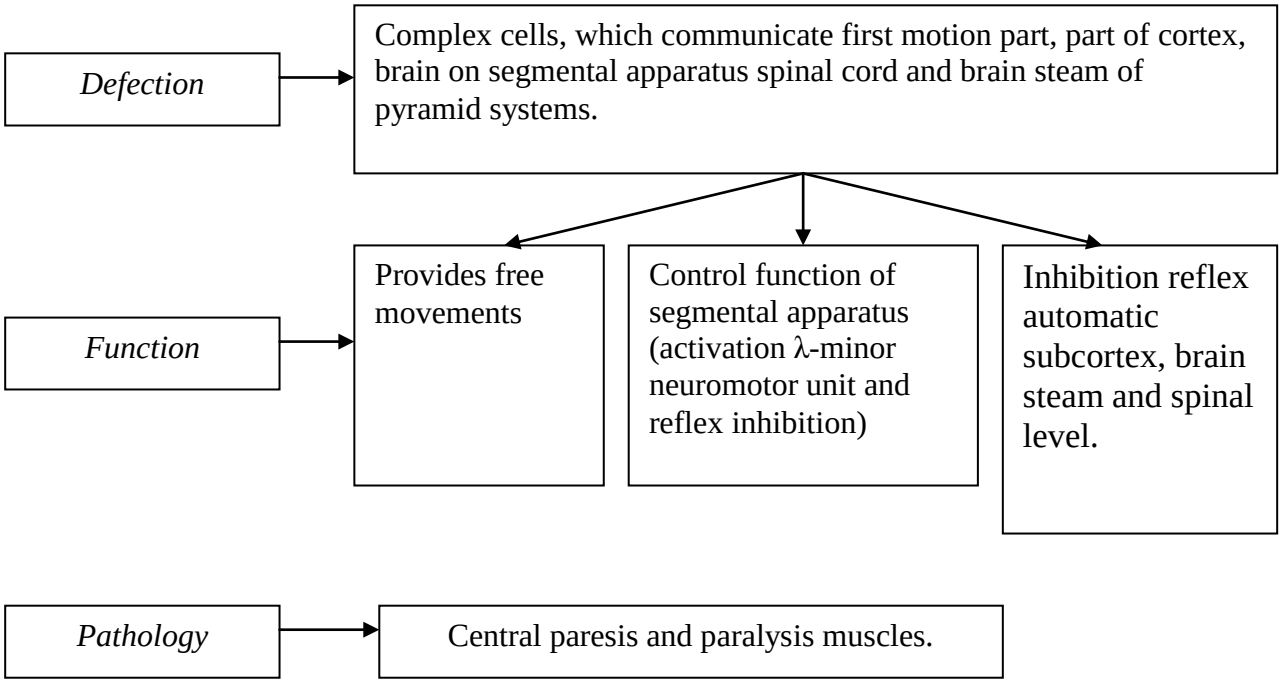
IV. Interdisciplinary integration

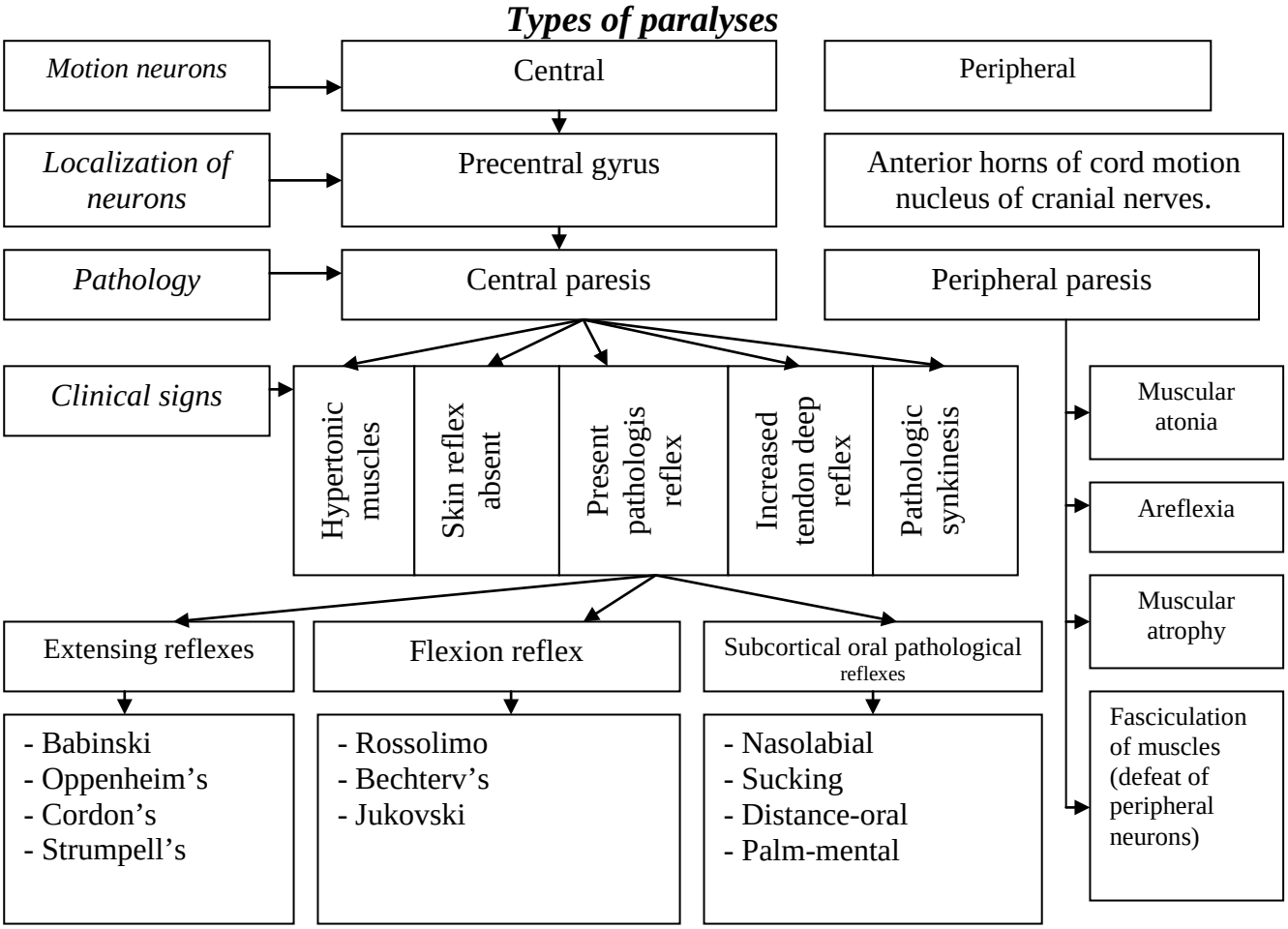
Disciplines	To know	Able
Previous disciplines		
Normal anatomy	Anatomy of crebrum, spinal and spinal cord, peripheral nervous system.	To draw the chart of head and spinal cord and motion of motive way.
Histology	Structure of cell of Bets, neuromotor unit	Microscopic to distinguish

	of front horns of spinal cord, efferent motive ways and peripheral nerves.	motive nervous cells, nervous fibres of the central and peripheral nervous system.
Normal physiology	Function λ-minor but ß-neuromotor unit front horns of spinal cord in maintenance of muscular tone.	To draw the reflex chart of connections λ-minor but ß-neuromotor spinal cord, that support muscular tone.
Pathologic anatomy	Pathomorfologic changes of neurons and pathways.	Microscopically to distinguish pathology of neurons and anchorwomen of pathways.
Next disciplines (that provided)		
Neuro-surgery	Paresis's and paralyses at presence of tumours, traumas of the nervous system.	To find out paresis's for neuro-surgical patients.
Infections diseases	Motive disorders in the case of acute poliomyelitis, diphtheritic polyneuropathy.	To find out paresis's for patients with poliomyelitis, diphtheritic polyneuropathy.
Psychiatry	Signs of „hysteric" paralyses	To distinguish the paralyses of functional and organic genesis.
Pediatry	Motive disorders in the case of child's cerebral paralyses	To find out paresis's for children, to distinguish the different clinical forms of child's cerebral paralysis.
Next disciplines (that provided)		
Disease of the peripheral nervous system	Features of peripheral paralyses in the case of neurology, plexitis, and polyneuropathy.	Indicate the level of defeat of the peripheral nervous system.
Vascular diseases of cerebrum	Signs of paresis's (paralyses) at presence of acute violations of cerebral circulation of blood.	To find out paralyses and paresis's for patients with the vascular diseases of cerebrum.
Demyelinating nervous diseases	Signs of central paresis (to the paralysis) in the case of demyelinating diseases	To find out paralyses or paresis's for patients with demyelinating diseases.

V. Table of contents of theme of employment

Pyramid system





VI. Plan and organizational structure of employment

№ пп	Basic stages of employment, their functions and maintenance	Educational aims are in the levels of mastering	Methods of control and studies	Materials of the methodical providing	Time (хв.)
I. Preparatory stage					
1.	Organization of employment.			Academic of magazine. See the „Educational aims" „Actual of theme"	1
2.	Determination of educational aims and motivation.				1
3.	Control of initial level of knowledges: - structure and motion of motive way; - functions of the pyramid system;	II	Individual questioning; test control of the II level; decision of	Tables, pictures, questions for the verbal questioning,	6

	- signs of peripheral and central paralyses; - mechanisms of providing of muscles		typical tasks of the II level	tests of the II level, typical tasks of the II level	
II. Basic stage					
4.	Formings of professional skills and abilities. 1. To lay hands on the method of inspection of motive function for a patient. 2. On the basis of found out pathological symptoms to set character of paralysis of muscles for a patient	III	The practical training is in working off skills; professional training in the decision of offtype clinical situations.	Patients, hospital charts. Professional algorithm of forming of skills and abilities of inspection of motive function	30
III. Final stage					
5.	Control and correction of level of professional skills and abilities.	III	Individual control of practical skills, estimation of clinical job performances. Decision of offtype tasks of the III level.	Patients. Offtype situational tasks of the III level.	5
6.	Discussion of results of investigation				
7.	Working out the totals of practical employment.				1
8.	Home task			Oriented map for independent work with literature	1

VII. Materials of the methodical providing of employment

1. Control materials for the preparatory stage of employment.

Question for the verbal questioning.

1. What amount of neurons is carry out realization of autokinesias of muscles, and as they are called?
2. Where are bodies of central neurons?

3. Where are bodies of peripheral neurons?
4. Where is crossing of fibres of cortex-spinal and cortex-nuclear ways and what feature him?
5. What muscles do have bilateral cortex innervations?
6. Give determination of the „pyramid system", name its functions.
7. What „muscular tone", what mechanism of his maintenance?
8. That does mean a concept „Central hemiplegia"?

Tests and typical tasks of the II level

Tests of the II level

№	Tests of the II level	Standard of answer
1.	Specify the signs of central paralysis: a) atrophia of muscles; b) high blood pressure of muscles; c) pathological reflexes; d) арефлексия of deep reflexes; e) hyperreflexia of deep reflexes	b), c), d)
2.	Specify the signs of peripheral paralysis: a) atrophy of muscles; b) pathological reflexes; c) areflexia; d) muscular atony; e) hyperreflexia of deep reflexes	a), c), d)

Typical tasks of the II level

	Typical tasks of the II level	Standard of answer
	A patient has weakness of muscles of right arm is with a hyporeflexia and low muscular tone. You will define pathology.	Peripheral monoparesis of right arm
2.	The patient which carried a stroke, active motions absent in the left extremities. Muscular tone and reflexes is enhanceable. How is such violation called?	Central hemiplegia of right.

2. Materials of the methodical providing of the basic stage of employment.

Professional algorithm of forming of skills and abilities of inspection of research of motive function for a patient.

	Task	Pointing	Notes
1.	Take possession on the method of inspection of	In such sequence to execute research: 1) to the volume of passive motions in the joints of	You will pay regard to absence of pathologic joint.

	motive function for a patient.	extremities; 2) to the volume of active motions in the joints of extremities, including tests Barre (overhead and lower), poses of „Buddha"; 3) forces of muscles of proximal and distal departments of extremities; 4) to the state of tone of muscles of extremities; 5) to the state of physiology reflexes; 6) to the presence of pathological reflexes, clonus, pathological synkinesis; 7) to the presence of atrophy and fibrillar of fasciculation	You remember that research of will be beginning from large and conclude shallow joints. A patient must lie and weakened. You remember that for children pathologic reflexes of extensing type are physiological normal to year.
2.	On the basis of found out pathologic symptoms to set character of paralysis of muscles.	Group found out the signs of paresis or paralysis and take advantage of structurally logical chart of maintenance.	You will pay attention, that a paralysis or paresis in the case of normal deep and skin reflexes gives to foundation to suspect his hysterical character.

3. Control materials for the final stage of employment.

Offtype tasks of the III level.

№	Offtype tasks of the III level	Standard of answer
1.	For a patient the weakness of left arm grew gradually, deep reflexes on a hand are not caused. Sensitiveness is stored. How is such violation of motion named? The defeat of what nervous structures can be suspected? What yet symptoms can afterwards appear?	Peripheral monoparesis. Front horns or front counterfoils at level S5-th1 of segments. Atrophy and atony of muscles.
2.	For a patient pyramid ways are damaged in overhead-thoracal department of spinal cord. Will deep and skin reflexes change? If will change, then as?	There will be a hyperreflexia of deep reflexes on feet, dermic and plantar will disappear. Appears pathological reflexes on feet.
3.	In a patient there was a haemorrhage in a right internal capsule. What motive neuron did suffer? From what part and what motive disorders will	Central. From an opposite side there is a central hemiplegia and explorer

	appear? Will there be the broken sensitiveness, what kinds, where and on what type?	hemianaesthesia of all types of sensitiveness.

4. Materials of the methodical providing of independent works of students

Oriented map of independent work with literature.

Basic tasks	Pointing
To learn	
Structure of motive pathways.	To draw motion of motive way in a notebook.
Functions of the pyramid system.	To transfer the functions of the pyramid system in a notebook
Mechanisms of providing of muscular tone at the level of reflex arcs.	To draw the chart of maintenance of muscular tone at the level of reflex arc.
Signs of central and peripheral paralyses and patogenesis of their origin.	To make the table of differences of central and peripheral paralyses

Theme: „Extrapyramidal system and syndromes of its defeat”

I. Actuality of theme

The extrapyramidal system (EPS) plays an important role in execution motive acts. For implementation of motion it is necessary connecting of mechanisms, which regulate a sequence, force and duration of muscular reductions and regulate the choice of necessary muscles. That a motive act is formed as a result of successive, concerted after force and duration of including of separate neurons of crust-muscular way and large complex of nervous structures of other systems which unite in the екстрапірамідну system.

The extrapyramidal system operates reflex-automated and has a far of connections. Therefore neurologists, neuro-surgeons, internists, paediatricians, must know pathology of EPS. In time to recognize the symptoms of defeat of EPS will allow correctly to define the level of damage of the nervous system, set an exact diagnosis, appoint necessary treatment.

II. Educational aims

A student must **know:**

- Anatomy, physiology of the extrapyramidal system and feature of motion of its ways
- Clinical displays of defeat of the extrapyramidal system.

A student must **be able:**

- To probe the functions of the extrapyramidal system
- To find out violations of the extrapyramidal system, define them characteristic level: acineto-regidity syndrome, hyperkinetic syndromes
- To conduct differential diagnostics of plastic and spastic high blood pressure.

III. Educate aims

To form for students sensitive, benevolent attitude toward a patient. To lay hands on ability to set a psychological contact with a patient, attentively and carefully to conduct an inspection sick. To formulate for students sensitive, benevolent attitude toward a patient with the defeat of the extrapyramidal system.

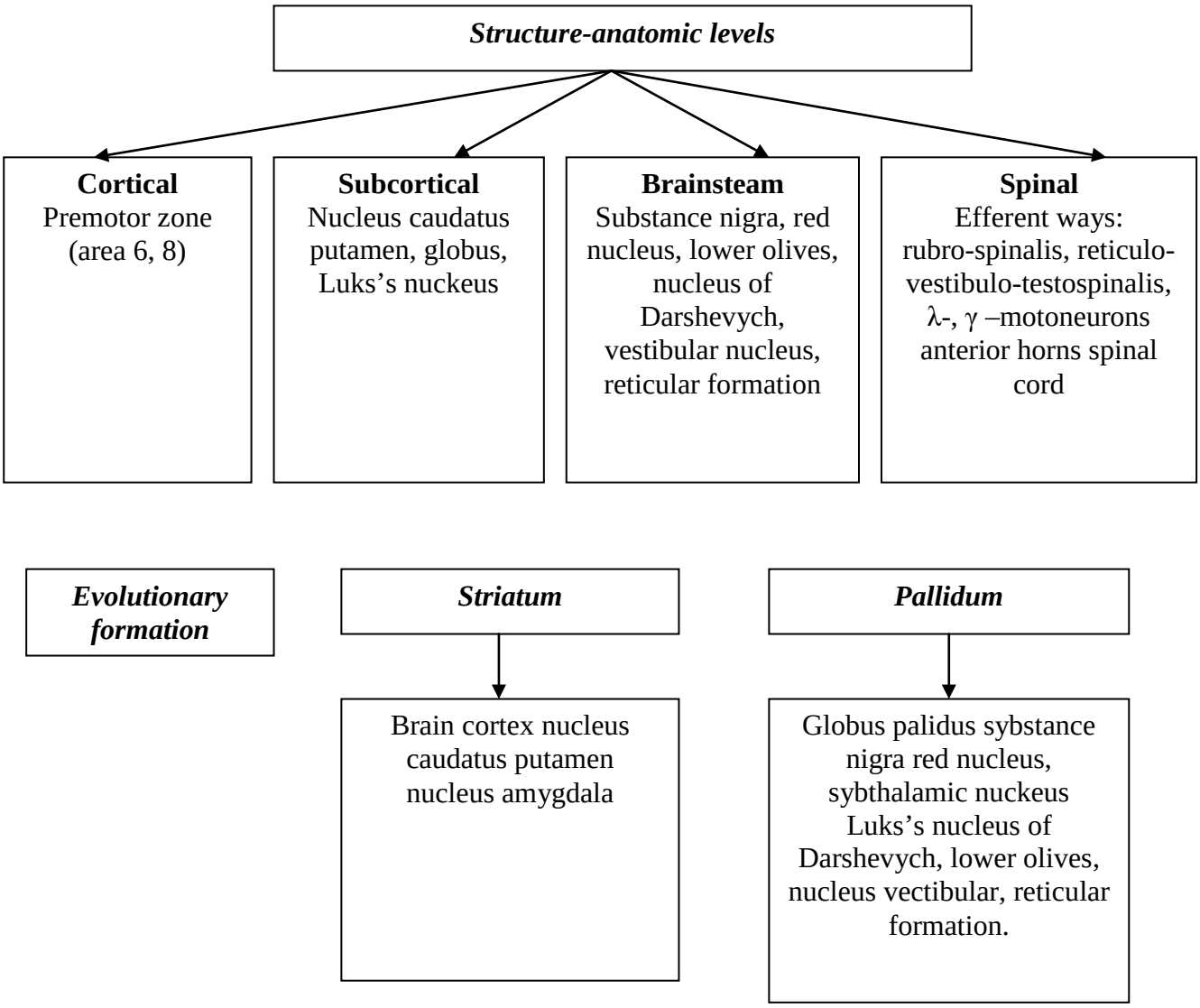
IV. Interdisciplinary integration

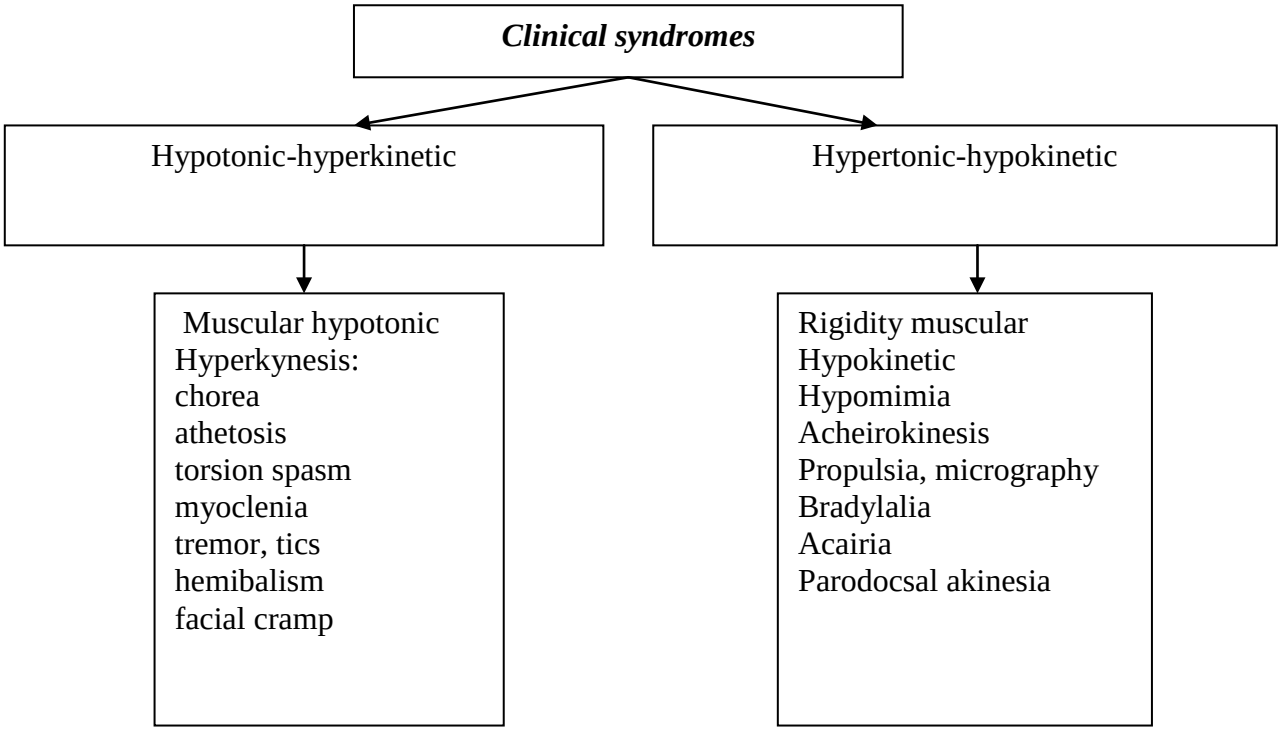
Disciplines	To know	Able
Previous disciplines		
Normal anatomy	Structure of EPS.	On tables and plaster casts to rotin the structures of EPS.
Normal physiology	Physiology of EPS.	To draw the charts of intercommunications between the structures of EPS, chart of

		neurotransmitters in EPS.
Biochemistry	Exchange of cyclic catecholamine.	
Pathoanatomy	Pathomorphology changes are in the case of defeat of EPS.	Microscopically to distinguish pathology of EPS
Next disciplines (that provided)		
Neuro-surgery	Extrapyramidal violations are in the case of traumas of the nervous system, brain-growths	To find out extrapyramidal disorders for neuro-surgical patients.
Infectious diseases	Patients have extrapyramidal violations on encephalitis.	To find out extrapyramidal violations for patients on encephalitis
Psychiatry	Complication is on condition of setting of neuroleptic; „hysterical" hyperkinesias	To find out extrapyramidal disorders for patients, who lasted neuroleptic treat one self, to conduct the correction of treatment; to distinguish functional and organic hyperkinesias.
Endocrine illnesses	Patients have extrapyramidal disorders with endocrine pathology.	To find out extrapyramidal disorders for patients with endocrine by pathology.
Internal illnesses (rheumatology)	Rheumatic chorea.	To define etiology of extrapyramidal disorders on the basis of clinical symptoms and additional inspections.
Intra object integration		
Craniocerebral trauma is	Description after cranial cerebral trauma parkinsonism.	To find out extrapyramidal disorders for patients, which carried craniocerebral trauma, to conduct the correction of treatment.
Vascular diseases of cerebrum	Features of extrapyramidal insufficiency are in the case of encephalitis.	To find out extrapyramidal symptoms for patients with cerebrovascular pathology, to appoint treatment.
Infectious diseases	Description of postencephalitis parkinsonism.	To find out extrapyramidal disorders for patients which carried an encephalitis
Inheritable nervous diseases	Features of diseases are with the overwhelming defeat of EPS (Huntington's chorea, hepatolenticular degeneration, Parkinson's diseases).	To find out extrapyramidal violations, appoint necessary inspections and treatments.
A defeat of the	Extrapyramidal violations in the	Find out connection of

nervous system is in the case of exogenous intoxications	case of chronic intoxication by the oxide of carbon, manganese, нейролептиками.	extrapyramidal violations with exogenous toxic agents, to appoint treatment.

V. Table of contents of theme of lesson
Extrapyramidal system





Correction defeat of metabolism dopamine with presence Parkinsonism

Increase synthesis DA
Preparation have L-DOPA (nacom or sinimet, madopar)

Stimulation ejection DA of granule maintenance in presynaptic part DA-synapse:
1. Blockers of glutamatis receptors (amantadine, norakine).
2. Antogonicts DA (bramckiptin's, pergolid)

Inhibition process backward capture DA:
1. Anticholinergics preparations (ciklodols, parcopans)
2. Antidepressants (amitriptyline)

Inhibition process catabolism DA:
1. Inhibitor MAO (selegiline)
2. Inhibitor catecholaamintransferas (COMT) (tolpocans)

VI. Plan and organizational structure of employment

№	Basic stages of employment, their function and maintenance	Educational aims are in the levels of mastering	Methods of control and studies	Materials of the methodical providing	Time
I. Preparatory stage					
1	Organization of employment.			Academic of magazine. See the „Educational aims" „Actual of theme	1
2	Determination of educational aims and motivation.				1
3	Control of initial level of knowledges. ① A structure extra of the pyramid system, its function. ② Functional copulas of the extrapyramidal system. ③ The signs of defeat of old and new departments extra of the pyramid system. ④ Basis treatment preparations.	II	Individual questioning; test control of the II level; decision of typical tasks of the II level	Tables, pictures, questions, tests of the II level, typical tasks of the II level	10
II. Basic stage					
4.	Forming of professional skills and abilities. ① To lay hands on the method of inspection of the extrapyramidal system for a patient. ② To find out the symptoms of defeat of the extrapyramidal system. ③ On the basis of found out pathological symptoms to set for a patient. ④ To set the level of defeat of the extrapyramidal system.	III	The practical training is in working off skills; the professional training is in the decision of offtype clinical situations.	Patients, hospital charts. Professional algorithm of forming of skills and abilities of inspection of the extrapyrami-dal system.	30
III. Final stage					
5.	Control and correction of level of professional skills and abilities.	III	Individual control of practical skills, estimation of clinical job	Patients. Offtype situational tasks of the III level.	
6.	Discussion of results of examination.				
7.	Working out the totals of				3

	practical lesson.		performances. Decision of offtype tasks of the III level.		
8.	Home task			A card is oriented for independent work with literature	1

VII. Materials of the methodical providing of employment

1. Materials of control for the preparatory stage of lesson.

A question is for the verbal questioning.

1. Name the evolutional levels of the extrapyramidal system. What anatomic educations are included in the old and new departments of the extrapyramidal system?
2. Name the functions of the extrapyramidal system.
3. How does muscular tone change at the defeats of the extrapyramidal system? What clinical does extrapyramidal rigid differ from pyramid spastic?
4. What clinically does tremor differ at a Parkinsonism from to tremor in the case of defeat of cerebellum?
5. What symptoms of Parkinsonism by terms: acheirokinesia, bradylalia, micrography, propulsion, paradoxical akinesia?
6. Name the syndromes of defeat of new department of the extrapyramidal system.
7. Name the basic types of hyperkinesias.

Tests and typical tasks of the II level

Tests of the II level

	Tests of the II level	Standard of answer
1.	Specify the symptoms of defeat of the striatum system: a) hypomimia b) quiet monotonous speech c) hyperkinesias d) muscular hypotonia e) propulsion	b), d)
2.	Name symptoms, characteristic for the defeat of the pallidum system: a) muscular hypotonia b) hyperkinesias c)hypomimia	b), h), c), d), f), g)

	d) micrography e) central paresises of extremities f) bradykinesia, g) muscular tone enhanceabl is on a plastic type h) palilalia e) peripheral paresises of muscles	

Typical tasks of the II level

	Typical tasks of the II level	Standard of answer
1.	For the patient of hypomimia, motions are slow, muscular tone is enhanceable on a plastic type, тремор of rest. Name a pathologic syndrome. What structures is disorder?	Hypertensive-hypokinetic or syndrome of parkinsonism. Pallidum system (black substance, globus palidus)
2.	A child has fasts, sweepings involuntary; unstereotype motions in the muscles of face and extremities. Muscular tone is lower. How is the resulted syndrome called? What structures is disorder?	Hypertensive-hypokinetic syndrome (chorea). Having a tail kernel, crust.

2. Materials of the methodical providing of the basic stage of lessons.

The professional algorithm of forming of skills and abilities of research extrapyramidal system

	Task	Pointing	Notes
1.	To lay hands on the method of examination of functions of the extrapyramidal system for a patient	In such sequence to execute examination: 1. To examine a pose, mimic, amount and rate of motions, gait. 2. To check up the volume of active and passive motions. 3. To exam the state of muscular tone: to find out the increase of tone (on the type of „gear-wheel", test of Noyka-Ganev's), or decline of him. 4. To probe the symptom of Gordon II.	To eliminate pathology of joints, which can entail limitation of motions, other pain the phenomen from the side of muscles? To eliminate paresis's of muscles of person and extremities. A patient must lie and maximal weakened. To pay attention, that the increase of tone can take a place in the case of defeat of pyramid ways (symptom of „difficult knife"); a decline of tone

			can be the sign of peripheral paresis and accompanied atrophia and areflexia of deep reflexes, and also to testify to pathology of cerebellum.
		5. To find out tremor, hyperkinesias, set their kinds.	To remember, that tremor can be observed at presence of thyrotoxicosis, alcoholic abstinence and on. Pay a regard to possibility of hysterical hyperkinesias.
		6. To find out the changes of language (quiet, slow, little modulated, with the reiteration of the last word), letter (to micrography).	It is needed to estimate the changes of speech together with other displays of parkinsonism (hypomimia, bradykinesia, muscular rigidity, tremor)
		7. To set violation of психоемоційної sphere (acairia, chorea (mentality), depression).	It is necessary to set a benevolent contact with patients.
2.	On the basis of found out pathologic symptoms to set extrapyramidal syndrome and level disorders	Group found out signs; define a syndrome and level of defeats of the extrapyramidal system.	Pay a regard to possibility of combination of different extrapyramidal violations and other combinations of organic defeats of brain.

3. Materials of control for the final stage of lessons.

Offtype tasks of the III level.

	Offtype tasks of the III level	Standard of answer
1.	A patient 50 years grumbles about a general weakness, constraint: shaking of right arm. Objectiv: for a patient flexor pose, hypomimia, general oligo- and hypokinesia. Static tremor of upper-right-hand extremities reminds „rolling of pills". Name a syndrome. To define the focus of defeat.	Syndrome parkinsonism. Cell focus in nigropallidar formation educations mainly on the right.
2.	A patient had various after force and localization reductions of muscles of person, extremities. Emotionally mimic and reactive motions sharply	Hyperkynesia: chorea focus-strial system.

	strengthening. Tone of muscles is mionectic, in joints observed wears away unbending; the volume of passive motions from them is megascopic. Name a syndrome. To define the hearth of defeat.	
3.	At sick chorea form movement of fingers of brushes and feet, which are increased during autokinesias? Name a syndrome. To define the focus of defeat.	Atetosis. Subcortical ganglions: putament, globus palidus.

4. Materials of the methodical providing of self-preparation of students

The card of independent work is oriented with literature.

Basic tasks	Pointing
To learn	
Anatomico-physiological features of the extrapyramidal system	To name and represent the anatomic structural levels of EPS and basic main communicate of function of EPS.
Syndromes which are observed at the defeat of EPS.	To enter the syndromes of defeat of EPS in a notebook.
Method inspections sick with pathology of EPS.	Neurologic exam, use of accessory methods of research of EMG, EEG, vegetative tests.
Differential diagnostics of types of muscular hypertensive tone (spastic, plastic)	To enter differential diagnosis of types of muscular hypertensive tone in a notebook (спастичний, plastic).

Theme: „Cerebellum. Syndromes of defeat of cerebellum”

I. Actuality of theme

The important condition of моторики of man is the system of statics and co-ordination, which controls the equilibrium of body, stabilizes the center of weight, regulates tone and co-ordination of activity of muscles. The leading organ of the system of statics, co-ordination of motions and muscular tone is a cerebellum and his connection with other departments of the nervous system.

II. Educational aims

A student must **know:**

- anatomico-physiological features of cerebellum:
  are communicate with the different departments of cerebral and spinal brain;
  are afferent and efferent ways;
  are hemispheres and vermis of cerebellum.
- functions of cerebellum;
- method of exams of functions of cerebellum;
- disorders of vermis of cerebellum and hemispheres;
- types of ataxia (to the cerebellum, cortical, vestibular, sensitive);
- differential diagnostics of different types of атаксій.

Practical on skills: a review of patients is with disorders of function of cerebellum.

A student must **be able:**

- to conduct the clinical-neurologic inspection of patients with cerebellum disorders;
- to analyse the results of clinical and functional methods of research;
- to define (level) localization of pathologic focus

III. Educate aims

To educate modern clinical thought for students. To develop sense of responsibility for a timeliness and rightness of raising of topic of clinical diagnosis, to estimate the general state of patient. To formulate deontology presentation in relation to the feature of relation of future specialist to the patient.

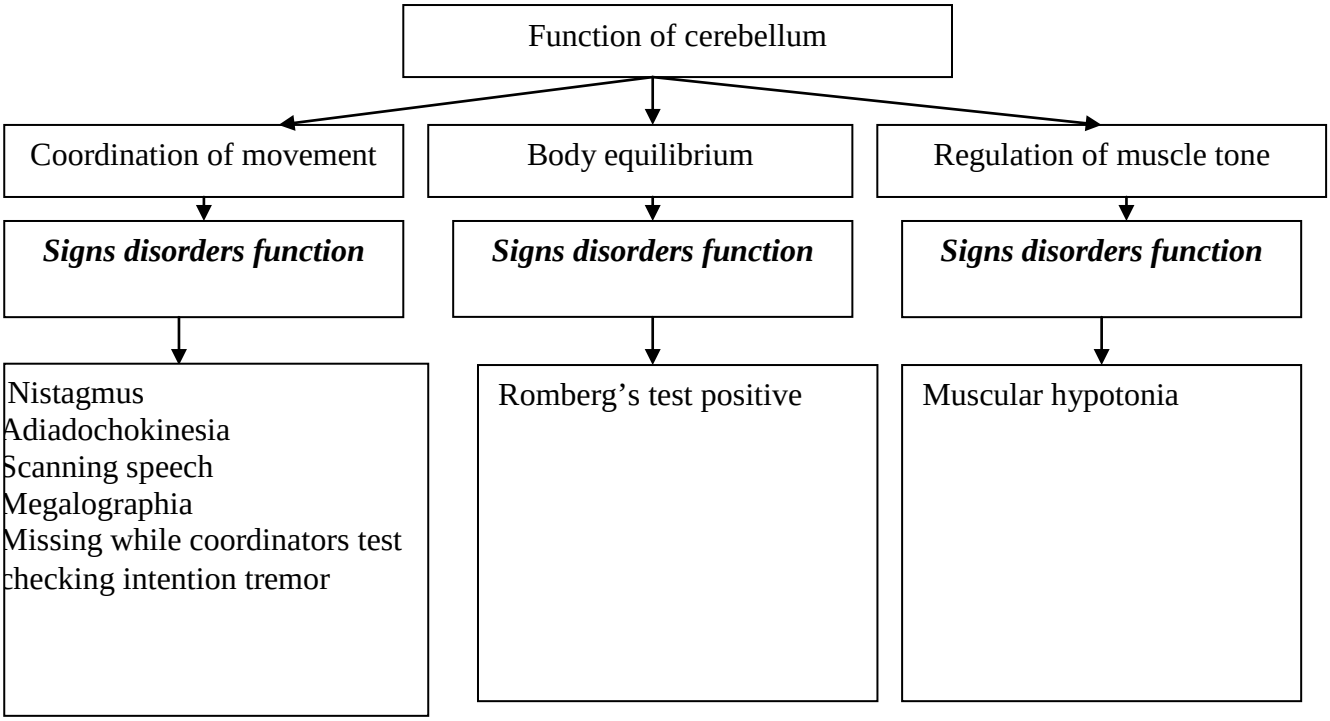
IV. Interdisciplinary integration

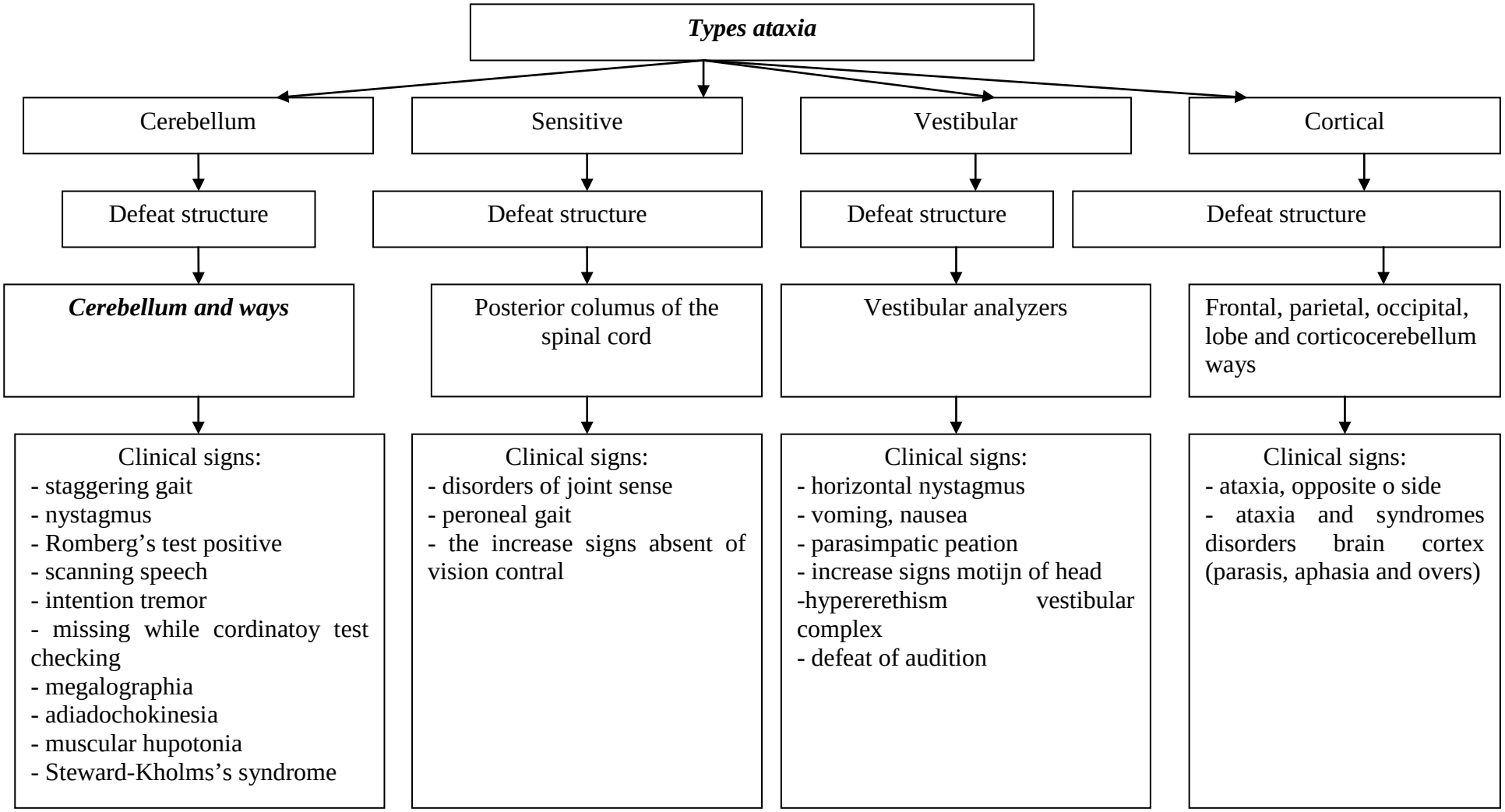
Disciplines	To know	Able
Previous disciplines		
Anatomy	Anatomy of cerebellum (structure and motion of his ways)	Schematically to represent a location, departments,

		leading ways of cerebellum.
Physiology	Functions of cerebellum, value of cerebellum are in the relation of agile functions.	To exam the functions of cerebellum.
Histology	Histological structure of cerebellum, nucleus, ontogenesis, phylogenesis of cerebellum.	Microscopically to distinguish the structures of cerebellum.
Next disciplines (that provided)		
Neuro-surgery	Initial signs and disorders of cerebellum (worm and hemispheres at presence of tumors, traumas of the nervous system).	To put a topic diagnosis, find out co-ordinating violations.
Otolaryngology	Disorders of cerebellum and vestibular nerves.	To put a topic diagnosis, conduct differential diagnostics between the different types of ataxia and vestibular disorders of the VIII pair of cranial nerves.
Intra object integration		
Chronic vascular illnesses, acute violations of cerebral circulation of blood	Clinical symptoms of defeat of cerebellum with acute violations of cerebral circulation of blood.	To find out the symptoms of defeat of cerebellum for patients with acute violations of cerebral circulation of blood.
Demyelinating diseases	Clinical symptoms of defeat of cerebellum in the case of demyelinating diseases.	To find out the symptoms of defeat of cerebellum for patients with the dissipated sclerosis, encephalomyelitis.
The hereditary nervous diseases cerebellum system.	Coordinating violations are in the case of familial ataxia.	To find out the symptoms of defeat of cerebellum for patients with Friedreich's ataxia and Pier-Marie's ataxia.

V. Table of contents of theme of lesson

Cerebellum and his pathology




Types ataxia
Cerebellum
Sensitive
Vestibular
Cortical
Defeat structure
Defeat structure
Defeat structure
Defeat structure
Cerebellum and ways
Posterior columus of the spinal cord
Vestibular analyzers
Frontal, parietal, occipital, lobe and corticocerebellum ways
Clinical signs:
- staggering gait
- nystagmus
- Romberg's test positive
- scanning speech
- intention tremor
- missing while cordinatoy test checking
- megalographia
- adiadochokinesia
- muscular hupotonia
- Steward-Kholms's syndrome
Clinical signs:
- disorders of joint sense
- peroneal gait
- the increase signs absent of vision contral
Clinical signs:
- horizontal nystagmus
- voming, nausea
- parasimpatic peation
- increase signs motijn of head
-hypererethism vestibular complex
- defeat of audition
Clinical signs:
- ataxia, opposite o side
- ataxia and syndromes disorders brain cortex (parasis, aphasia and overs)

VI. Plan and organizational structure of lesson

	Basic stages of lesson their functions and maintenance	Educational aims are in the levels of mastering	Methods of control and studies	Materials of the methodical providing	Time
I. Preparatory stage					
1	Organization of lesson			Academic of magazine. See the „Educa-tional aims" „Actual of theme	1
2	Determination of educational aims and motivation.				1
3	Control of initial level of knowledge's: ① Anatomic structures of cerebellum. ② Functions of cerebellum. ③ Clinical evedence of disorders of function of cerebellum. ④ Method of exam of functions of cerebellum.	II	Individual questioning; test control of the II level; decision of typical tasks of the II level	Tables, pictures, questions, tests of the II level, typical tasks of the II level	10
II. Basic stage					
4.	Forming of professional skills ① To take procession on the method of clinical inspection of patients with disorders cerebellum. ② To diagnose disorders of function of cerebellum on the basis of collection, anamnesis, complaints, clinic-neurology exam. ③ To conduct differential diagnostics of ataxias. ④ To conduct the clinic-neurology inspection of patient with disorder of system cerebellum.	III	The practical training is in working off skills; the professional training is in the decision of offtype clinical situations.	Patients, hospital charts. Professional algorithm of forming of skills and abilities.	30

III. Final stage					
5.	Control and correction of level of professional skills and abilities.	III	Individual control of practical skills, estimation of clinical job performances. Decision of offtype tasks of the III level.	Patients. Offtype situational tasks of the III level.	2
6.	Discussion of results of exam.				
7.	Working out the totals of practical lesson.				
8.	Home task			A card is oriented for independent work with literature	1

VII. Materials of the methodical providing of lesson

1. Materials of control for the preparatory stage of lesson.

A question is for the verbal questioning.

1. Localization and that structure of cerebellum.
2. What and how many nucleuses do the hemispheres of cerebellum have?
3. Name the afferents and efferent's ways of cerebellum.
4. The defeat of what structures of the nervous system entail decline of muscular tone?
5. What are disorders of cerebellum in case of it defeat?
6. Specify the types of ataxia and their difference.

Tests and typical tasks of the II level

Tests of the II level

	Tests of the II level	Standard of answer
1.	Name ways which pass through the overhead leg of cerebellum: a) olivo-cerebellum d) reticulo-cerebellum c) dento-rubralis d) spino-cerebellum Hover's e) vestibule-cerebellum	c, d
2.	Name the methods of research of functions of cerebellum: a) finger-nose test;	a, b, c

	b) a test is on adiodochokines; c) heel-to knee test; d) test of Barre; e) examination of eye ground; f) test of Weber's.	

Typical tasks of the II level

	Typical tasks of the II level	Standard of answer
1.	For a patient tumour of vermis cerebellum. What symptoms have patient from what part.	Body ataxia; at walking unsteadiness is toward a defeat.
2.	Whether there are co-ordinating disorders at the defeat of frontal lobe.	Observed on a side an opposite defeat.
3.	The sick has a staggering gait, intention tremor Where is a focus of defeat? As tone of muscles will be changed.	A cerebellum is defeat. There is muscular hypotonia on side defeat

2. Materials of the methodical providing of the basic stage of lesson.

Professional algorithm of forming of skills and abilities inspections sick with the defeat of cerebellum.

	Task	Pointing	Notes
1.	Take prossesion on the method of inspection of cerebellum functions.	To check in such sequence: 1. Motion sick on a straight line with the opened and closed eyes. 2. Firmness of patient is in the pose of Romberg's. 3. A presence of asynergia is at the test of Babinski's. 4. Presence of symptom of Stewart-Holmes. 5. Presence of nystagmus, scanning speech, megallographia. 6. Patient must made finger-nose, neel-to knee tests, and test adiadochokinesis, dismetria 7. Condition of muscular tone.	In the case of exposure of ataxia to check influence of control of sight for its expressed. At presence of muscular hypotonic able to differentiate its reasons, for what check up a

			reflex motive functions and exception the presence of hypotonic-hypercinetic symptom.
2.	On the basis of found out symptoms to set localization of pathological process.	For determination of level of defeat look at what side is ataxia into account direction of waggle sick, what extremities ataxia is in, at a look a nystagmus appears in what side.	Put topic diagnosis to take into the presence of reflex movements and sensory disorder.

3. Materials of control for the final stage of lesson.

Offtype tasks of the III level.

	Offtype tasks of the III level	Standard of answer
1.	The patient of 25 years had a weakness in feet, numbness in them; a staggering gait, impossibility to execute clear motions a left arm. Found out a horizontal nystagmus at a look to the left. Force of muscles of feet is mionectic to 2 marks, abdominal reflexes absent; tendon reflexes from extremities are high, bilateral syndrome of Babinski's. In the pose of Romberg's of rejection to the left. At finger-nose, neel-to knee tests, ataxia appears on the left, adiadochokinesis, dismetria on the left. Specify pathologic syndromes, define localization of process.	Central lows pair paraparesis. Static, dynamic атаксії. A defeat of pyramid ways in the lateral ropes of thoracic department of spinal cord and cerebellum of left side

4. Materials of the methodical providing of self-preparation of students

The card of independent work is oriented with literature.

Basic tasks	Pointing
To learn	
Anatomy, physiology of cerebellum; his functions, motion of cerebellum ways.	To draw, to write afferents, efferent's ways and functions of cerebellum.
Clinical evidence of defeat of cerebellum.	To enter the syndromes of violation of functions of cerebellum in a notebook.
Types of ataxia and them basic diagnostic criteria.	To know the types of ataxia, their difference.

Theme: «Sensitive system and symptoms of it disorders. Sorts and types of violation of sensitiveness»

I. Actuality of theme

The doctor of any speciality must be able to investigate a sensible function, oriented among basic symptoms and syndromes of defeat of sensible analyzer, in an order correctly to conduct differential diagnostics and in good time to render a necessary help to the patient.

II. Educational aims

A student must **know:**

- a concept is about a reception and sensitiveness (a=II);
- classification of sensitiveness (a=II);
- structure of analysers of general sensitiveness (a=II);
- anatomy of superficial and deep sensation pathway (a=II);
- sorts and types of sensible violations (a=II);

A student must **be able:**

- to investigate the types of superficial and deep sensitiveness (a=III);
- to investigate the complex types of sensitiveness (a=III);
- to reveal out a sorts and type of sensible violations (a=III)

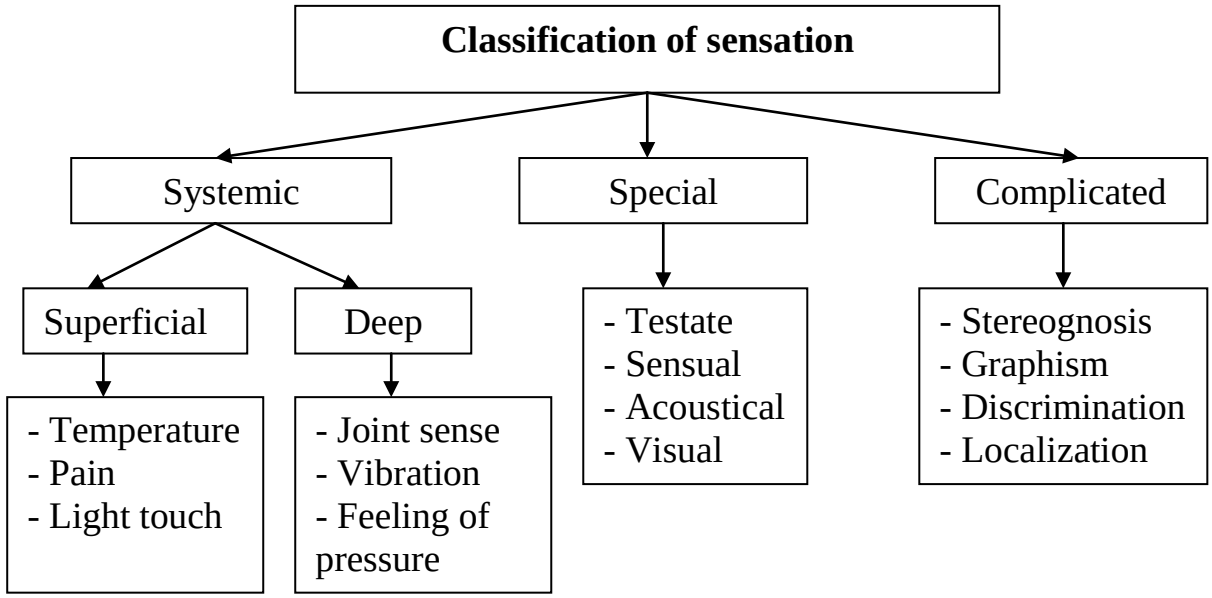
III. Educate aims

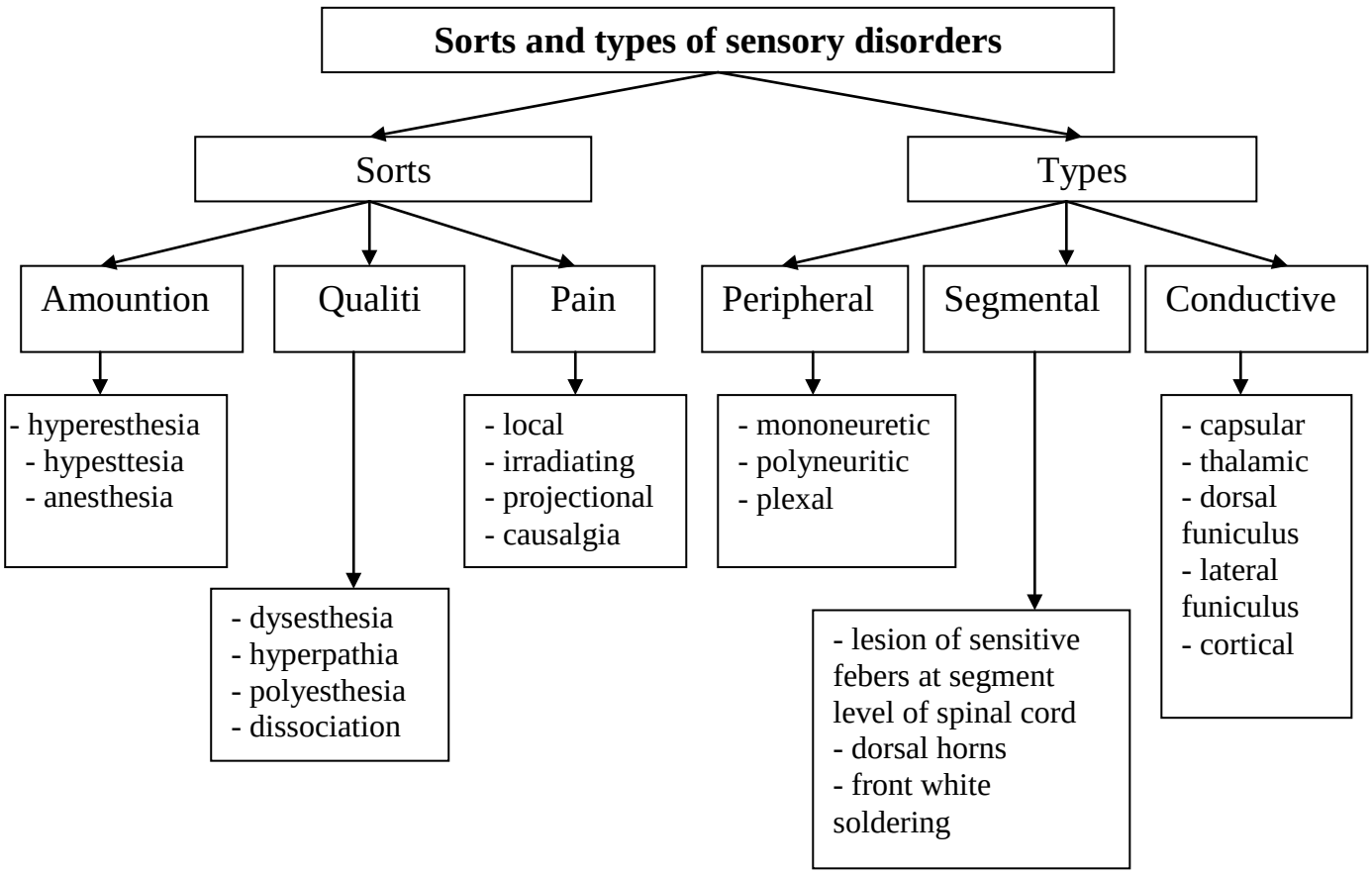
To educate for students observation and attentiveness at the exposure of symptoms of sensible violations for patients. To educate sensitive, humane attitude toward patients with violation of sensitiveness.

IV. Interdisciplinary integration

Disciplines	To know	Able
1. Previous disciplines		
Normal anatomy	anatomy of cerebral brain, spinal cord, peripheral nervous system, structure ways of sensation.	To rotin on the body of sick location of dermatoms (segments), points of output of plexus and peripheral nerves, projection of sensible nodes.
Normal physiology	Physiology of receptors, them general properties, structure of analyzers of general views of sensitiveness, structure and functioning of the nociceptive and antinociceptive systems of brain.	
Next disciplines (that provided)		
Neuro-surgery	Neuro-surgical patients have kinds and types of violation of sensitiveness	To investigate all types of sensitiveness, set kinds and types of their violations for neuro-surgical patients
Psychiatry	functional (hysterical) sensible violations	To differentiate organic and functional sensible violations
Intra object integration		
Syndromes of violation of sensitiveness	kinds and types of violation of sensitiveness	On the basis of found out symptoms to specify the level of defeat of the nervous system
Syndromes of motive disorders	violation of sensitiveness is in the case of defeat of different levels of the nervous system	To analyse the united violation of sensitiveness and motive function for patients for establishment of localization diagnosis

V. Table of contents of theme of employment





VI. Plan and organizational structure of employment

№	Basic stages of employment, their function and maintenance	Educational aims are in the levels of mastering	Methods of control and studies	Materials of the methodical providing	Time of min.
1	2	3	4	5	6
	1. Preparatory stage				
1. 2.	Organization of employment Determination of educational aims and motivation			Academic of magazine. See the „Educational aims” „Actual of theme”	1 1
3.	Control of initial level of knowledge’s: structure of central and peripheral departments of the nervous system; a concept is about a reception and sensitiveness; classification of sensitiveness; structure of analysers of general sensitiveness; motion of leading ways of separate types of sensitiveness; kinds and types of violation of sensitiveness.	II	Individual verbal questioning, test control of the II level, decision of typical tasks of the II level.	Tables, pictures, plaster casts, questions, tests of the II level, typical tasks of the II level.	10
	II. Basic stage				
4.	Forming of professional skills and abilities: to lay hands on the method of research of general and difficult views of sensitiveness; to lay hands on ability to find out kinds and types of violation of sensitiveness.	III	The practical training is in working off skills; the professional training is in the decision of offtype clinical situations.	Patients. A professional algorithm is for the capture of skills and abilities.	20

III. Final stage					
5. 6. 7.	Control and correction of level of professional skills and abilities. Working out the totals of practical employment. Home task.	III	Individual control of skills; decision of offtype tasks of the III level.	Patients. Offtype tasks of the III level. A reference map of independent work is with literature.	10 2 1

VII. Materials of the methodical providing of employment.

1. Materials of control for the preparatory stage of employment

A question is for the verbal questioning

1. Transfer anatomo-physiologic levels of the nervous system.
2. What is reception?
3. What is sensitiveness?
4. What classification of sensitiveness?
5. Where is a localization of the first to the neuron of superficial types of sensation?
6. Where is a localisation of the second to the neuron of superficial types of sensation?
7. Where is a localization of the third to the neuron of superficial types of sensation?
8. How is the way of explorers of superficial sensitiveness named in a spinal cord?
9. What is different's are between ways of superficial and deep sensation?
10. What general are between ways of superficial and deep sensation?
11. What are the types of violation of sensitiveness?
12. What are the types of violation of sensitiveness?

Tests and typical tasks of the II level

№	Tests of the II level	Standard of answer
1.	Show the quality sorts of sensitiveness: a) hyperesthesia b) polyesthesia c) hyperpathia d) dysesthesia e) hyposthesia f) anaesthesia	b, c, d
2.	Show the general sorts of sensitiveness: a) pain b) temperature c) feeling of localization d) vibration e) joint sense f) graphism	a, b, c, d

№	Typical tasks of the II level	Standard of answer
1.	The patient a pain and temperature sensitiveness absents on a right arm and right half of trunk as a «half of jacket», touch sense presents. Joint and vibration sensitiveness not lession. What type sensation is defeat?	Segmental dissociated type of violation of sensitiveness.
2.	A patient complains that can not a right arm find in pockets necessary objects him. The superficial and deep types of sensitiveness are present. What type sensation is defeat?	Stereognosis

2. Materials of the methodical providing of the basic stage of lesson.

Professional algorithm of forming of skills and abilities of research of sensitiveness

№	Task	Pointing	Notes
1.	To lay hands on the method of research of superficial types of sensitiveness	Research of sensitiveness is conducted in such sequence: 1) pain sense; 2) temperature; 3) touch sense;	Pain sense is examine with the help pin wheel or corsage pin, the examination starts from the segments of face, then cervical segments, the upper chest, and then go to the hands and feet, comparing sensitivity on the two sides of the body, then distal to proximal areas, and finally upper to lower aspects of the trunk. *Test for temperature discrimination.* Set up the by putting crushed ice and water in one tube and hot tap water in the other. Apply the cord and hot tubes in irregular alternation, letting each dwell on the skin long enough to register cold and heat. *Testing for touch* is done in a manner comparable to testing for pain. A cotton ball is used, with a small piese pulled out to reduce the area of contact. Apply this to a reference area to acquaint the patient with the sensation. Ask him to close his eyes and say “yes” each time he feels the cotton.
2.	To lay hands on the method of research of deep types of sensitiveness	4) joint sense; 5) vibration sense;	*The joint sense* (bathyanesthesia) – is deep sense, which is based on the ability to distinguish position and passive movements in joints. Position sense or proprioception is tested by gently

			moving a terminal phalanx – in the lower extremities by similar movements of the thumbs and fingers. *The vibration sense (pallesthesia)* – may be tested by placing the base of the tuning fork over a bony promince (it can back of the hand, feet) during vibration and again when the fork is stopped (silent control application)/ normally in arms is it – 15-20 s, in legs - 10-15 s.
3.	To lay hands on the method of research of difficult types of sensitiveness	6) localization sense; 7)discrimination sense; 8) graphism; 9) stereognosis (three-point distinction)	*Localization sense* – is the ability to point an exact place of the stimuli. *Discrimination sense (two-point discrimination)* – tests the ability of the patient to differentiate one stimulus from two. It may be examined by Weber's circus. After the patient closes his eyes the doctor puts stimuli by circus branches on either one side or both sides of skin of his body. At first pulling branches together, and then enlarging distance between them. He marks thus on what distance the patient feels two simultaneously put stimuli as two, and on what as one. The test leads are most sensitive of fingers, tough. The result of examine estimate under the special table. *Graphism* – is the ability to determine figures and numbers traced on the skin with the closed eyes. *Graphesthesia* – impaired graphism is very sensitive indicator of parietal lobe damage. *Stereognosis (three-point distinction)* is the abiliy to idenfily familiar object placed in the palm of the patient by palpation when the eyes are closed.
4.	On the basis of findings to define a kind and type of violation of sensitiveness.	Avail structurally logical by the chart of maintenance of employment.	

3. Materials of control for the final stage of employment

Offtype tasks of the III level

№	Offtype tasks of the III level	Standard of answer
1.	A patient grumbles about a defeat gaits of darkness. Exam: violation joint sense in the right foot, and also absence of superficial types of sensitiveness on the left from the level of belly-button and law. What sensory type of disorders is present for a patient? Why does a patient grumble about an ataxia at walking?	Batianesteziya and superficial anaesthesia on an explorer type. For a patient through violation muscularly-arthral sense there was a сенситивна ataxia.
2.	For a patient who practises upon an alcohol, has a pain in the distal departments of hands and feet, feeling of numbness in them. Exam: the decline of all types of sensitiveness on brushes and feet. How are feelings of numbness called? Is there what type of violation of sensitiveness for a patient? What structures of the nervous system are staggered?	Paresthesia. Peripheral (polyneuritic). Peripheral nerves are in the distal departments of extremities.

4. Materials of the methodical providing of self-preparation of students

The card of independent work is oriented with literature.

Basic tasks	Pointing
To repeat: Structure of central and peripheral departments of the nervous system	To write and draw the chart of structure of central and peripheral departments of the nervous system in a notebook
To learn: 1) classification of sensitiveness	To write the general, difficult and specific views of sensitiveness in a notebook
2) structure of analyzers of general sensitiveness	
3) motion of leading ways of superficial and deep types of sensitiveness	To write general and excellent signs in the location of neurons of different types of sensitiveness
4) sorts and types of violation of sensitiveness	To write kinds and types of violation of sensitiveness in a notebook

Theme: «Syndromes of violation of sensitiveness»

I. Actuality of theme

Violations of sensitiveness arise up in the case of damages of different departments of the central and peripheral nervous system. But they meet not only at presence of neurological diseases but also in the case of saccharine diabetes, anemia's, tumors, syphilis, alcoholism, and other diseases. It is needed to know the doctor of any speciality and able to find out the syndromes of sensible disorders, in good time to diagnose different diseases.

II. Educate aims

A student must **know:**

- ✓ Peripheral, spinal and cerebral syndromes of sensible violations (a=II).

A student must **be able:**

- ✓ to generalize found out for a patient sensible violations, define the syndrome of violation of sensitiveness (a=III).
- ✓ to determination the level of defeat of sensible analyzer (a=III).

III. Educator aims

To educate for students an attentiveness at the inspection of patient. A doctor must attach significance subjective feeling of patient and able singing to put them with objective violations of sensitiveness. The doctor of any speciality must know that the timely exposure of sensible disorders is instrumental in early diagnostics of different diseases.

IV. Interdisciplinary integration

Disciplines	To know	Able
Previous disciplines		
Normal anatomy	Structure of the nervous system	To find on a body the patient of point of output of cranial and spinal nerves, roots, plexus, interlacings.
Normal physiology	Physiology of the sensory systems, them basic properties.	
Next disciplines (that provided)		
Neuro-surgery	Syndromes of sensible disorders which arise up in the case of tumours of cerebral and spinal brain, craniocerebral traumas	To find out the syndromes of sensible disorders and set the level of defeat of the nervous system for neuro-surgical patients
Infectious diseases	Defeat of sensation which arise up in the case of	To find out sensible violations for infectious patients

	infectious diseases (meningitises, encephalitis, poliomyelitis, polyneuritis)	
Traumatology,	Defeat of sensation, which arise up at presence of traumatic defeats of peripheral nerves, head and spinal brain.	To find out sensible violations for patients with traumatic damages
Intra object integration		
Reflex motive function	Sensible disorders which accompany paralyses and paresises	To find out sensible violations for patients with paresises and paralyses
Cranial nerves	Sensible disorders which arise up in the case of defeat of cranial nerves	To find out sensible violations in the case of defeat of I, II, V, VII, VIII, IX, X pair of cranial nerves
Disease of the peripheral nervous system	Sensible disorders, which arise up in the case of neuritises, polyneuritis, defeats of roots, plexus, interlacings, knots	To discover and analyse violation of sensitiveness for patients with the diseases of the peripheral nervous system

V. Table of contents of theme of lesson

Syndrome's defeat of sensory

Cortex of post central gyrus	Sensory epileptic attacks (seizure). Monoanesthesia or anesthesia
Internal capsula	Hemihyposthesia or hemianasthesia all types of sensory, hemianopsia, hemiplegia.
Thalamus	Hemihyposthesia or hemianasthesia, thalamic pain, hemianopsia, hyperpathia, hemiataxia (sensitive)
Medial loop	Hemihyposthesia or hemianasthesia, hemiataxia (sensitive)
Lateral funiculus of spinal cord	Pain and temperature sense drops out on the opposite side, conductive type
Anterior grey soldering	Sectional dissociated disorders of sensation symmetric or both sides as "butterfly"
Dorsal root of spinal cord	Disorders of joint and vibration sense, homolateral sensitive ataxia.
Dorsal horn of spinal cord	Segmentar dissociated, disorders of syperficial sensory
Dorsal root	Pains, segmentar hyposthesia or anesthesia, svndrome of streech
Plexus	Pains, parasthesia, pain of point, hyposthesia or anesthesia.
Symmetric lesion of all peripheral nerves	Pains paresthesia, anesthesia, lesion of distal part of feet and hand, type "socks and gloves".
Peripheral nerve	Pains and paresthesia in the field of a nerve, hnypoesthesia or anesthesia

VI. Plan and organizational structure of employment

№	Basic stages of employment, their function and maintenance	Educational aims are in the levels of mastering	Methods of control and studies	Materials of the methodical providing	Time, min
1. Preparatory stage					
1. 2. 3.	Organization of employment Determination of educational aims and motivation. Control of initial level of knowledges: - peripheral syndromes of sensible violations - syndrome defeat sensory of level spinal cord - cerebral syndromes of sensible violations	II	Individual verbal questioning, test control of the II level, decision of typical tasks of the II level.	Academic magazine See the «Educational aims» and «Actuality of theme» Tables, pictures; question for the verbal questioning, tests of the II level, typical tasks of the II level	1 1 10
II. Basic stage					
4.	Forming of professional skills and abilities: - to learn to generalization found out for a patient sensible violations, determine sensible syndromes and set the level of defeat of the nervous system	III	The practical training is in working off skills; the professional training is in the decision of offtype clinical situations	Patients. An algorithm is for forming of practical skills and professional abilities.	20
III. Final stage					
5.	Control and correction of level of professional skills and abilities	III	Individual control of practical skills, decision of offtype tasks of the III level, analysis and	Patients. Offtype tasks of the III level.	10

			estimation of results of clinical inspection of patient		
6 7.	Working out the totals of theoretical employment. Home task.			A reference map of independent work is with literature.	2 1

VII. Materials of the methodical providing of employment

1. Materials of control for the preparatory stage of employment

A question is for the verbal questioning

1. What are the main signs of defeat peripheral nerve, plexus and dorsal horn?
2. What is the polyneuropathia? What is defeat?
3. What is the syndrome Brown-Sequard?

Tests and typical tasks of the II level

№	Tests of the II level	Standard of answer
1.	Show the symptoms of defeat of peripheral nerve: a) pain b) paresthesia c) violation of sensitiveness is on the half of body d) violation of sensitiveness is in the distal departments of extremities e) violation of sensitiveness is in the area of innervations of nerve f) segmentar anaesthesia	a) b) d) e)
2.	Show the signs of defeat of posterior root of spinal cord: a) explorer anesthesia of deep types of sensitiveness is from the side of defeat b) sensetive ataxia c) shooting pains d) there are herpetic rash e) dissociation of superficial types of sensitiveness	a) b)

№	Typical tasks of the II level	Standard of answer
1.	For a patient after a trauma the left elbow to the joint there were pains, paresthesias, decline of sensitiveness on the elbow edge of the left forearm and in 4, 5 fingers of brush. What type of violation of sensitiveness? Set the level of defeat.	Mononeuritic type. Elbow nerve.
2.	The patient has defeat of lumbar part ob spinal cord. What is the type lesion of sensation?	Explorer hypesthesia or anesthesia of all types of sensitiveness.
3.	The sick after supercooling had pains in the right half of face, and afterwards – hesper rash at the head of right. The hypesthesia of all types of sensitiveness is marked on the right half of face. What is defeat?	Nodes of trigeminal nerve (right).

2. Materials of the methodical providing of the basic stage of employment.

A professional algorithm of forming of practical skills and abilities is for determination of sensible syndromes

№	Task	Pointing	Notes
1.	Exame of patient with sensible violations	During an inspection to discover: 1) sorts of violation of sensitiveness; 2) type of violation of sensitiveness; 3) to analyse found out violations of sensitiveness	To pay attention in the presence of pain in a patient, his character: local, irradiating, projection, causalgia thalamic. Show types of lesion of sensitive.
2.	Show of level of sensory lesion.		Syndromes: peripheral nerve, posterior roots, nodes, posterior horn, lateral funiculus, thalamus, internal capsula, postcentral gyrus, parietal lobe.
3.	Show the level of defeat of sensible analyzer		

3. Materials of control for the final stage of employment

Offtype tasks of the III level

№	Offtype tasks of the III level	Standard of answer
1.	A patient after of stroke has weakness of left extremities. Where is a pathological focus? That here lesion? What type of violation of sensitiveness?	An internal capsule is business. Suffered thalamo-cortical way. Explorer type of violation of sensitiveness.
2.	A patient the posterior roots of spinal cord is constrained by a tumour at level Th8 right. What violations of sensitiveness will a patient have and in what extremities?	Conductive anesthesia from the level of Th8 of right (right foot).
3.	For a patient whom the day before used an alcohol and sleep on on a right arm, there was a weakness of right brush. The decline of sensitiveness is marked on the radial edge of forearm and in 1-3 fingers of hand. A brush hangs down, a patient can not unbend it. What types of sensitiveness did suffer? Name a kind and type of sensible violations. Define the focus of defeat.	All types of sensitiveness. Peripheral mononeural type of violation of sensitiveness. Radial nerve.

4. Materials of the methodical providing of self-preparation of students

The card of independent work is oriented with literature.

Basic tasks	Pointing
To learn: syndromes of violation of sensitiveness	To learn the clinical features of violation of sensitiveness in the case of lesion of nerve, spinal and cranial knodes, back horn, front white joint, thalamus lateral roots of spinal cord, at middle loop, thalamus, internal capsule, postcentral gyrus. To write the syndromes of sensible violations in a notebook.

Theme: «Pathology of olfactory and visual analyzers. Syndromes of defeat of oculomotor nerves»

II. Actuality of theme

I and II pair of cranial nerves are sensible and provide specific innervation of olfactories and visual. They are the direct derivatives of cerebrum and do not have kernels in to the brainstem.

III, IV, the VI pair of cranial nerves are motive and have nucleus, located in to the brainstem: nucleus III and IV pair – in the pedunculus of brain, and kernel of the VI pair – mainly in the tegmentum of pons.

II. Educational aims

A student must **know:**

- Anatomy and physiologic of olfactory analyzer: first neuron (gangliac cells of mucus shell of nose), second neuron (olfactory bulbs, olfactory way), third neuron (primary sybcortical olfactory centers are an olfactory triangle, septum pellucid, front substance perforate), cortical olfactory center (medial surface of temporal lobe of brain) (a-II);
- Anatomy and physiologic features of visual analyzer: peripheral department (rods, cones, bipolar cells, gangliac cells, nerve, chiasm, visual highway), central department (lateral geniculate body, pillow of thalamus (sybcorticalis centers), pinches of Gratsiole, gyrus calcaneys (occipital lobe) (crust center of analyzer)) (a-II);
- Anatomy and physiologic features III, IV, VI pair of cranial nerves: oculomotorius (mixed), abducens and trochlear (motive): localization of nucleus, output of roots of nerves from a skull, areas of innervation on periphery (a-II);
- Method of research I pair of cranial nerves and syndromes of defeat is a hyposmia, anosmia, hyperosmia, olfactory hallucinations (a-II);
- Method of research of II pair of cranial nerves and syndromes of defeat – amavrosis, homonymous and heteronymous hemianopsia (binasal and bitemporal), visual hallucinations; changes of disk of visual nerve (a-II);
- Research method III, IV, the VI pair of cranial nerves and syndromes of defeat are ptosis, cross-eye, diplopia, violation of convergence and accommodations, ophthalmoplegia (partial and complete); reflex arc of pupillary reflex, violation of puppillary reactions (syndrome of Argayla-Robertsona), miosis, midriasis, anisocaria (a-II);

A student must **be able:**

- To inspect neurological status of patient with the purpose of exposure of syndromes of defeat I, II, III, IV, VI pair of cranial nerves (a-III);

- To interpretation information got at an inspection I, II, III, IV, VI pair of cranial nerves (a-III);
- To put the topic diagnosis at the exposure of pathology I, II, III, IV, VI pair of cranial nerves (a-III);
- To prescribe the additional methods of research and estimate their results (a-III);
- To define tactic of doctor at discovered syndromes of defeat I, II, III, IV, VI pair of cranial nerves (a-III).

III. Educator aims

To develop creative capabilities in the process of clinical and laboratory instrumental research at the inspection of patients with the syndromes of the impression I, II, III, IV, VI pair of cranial nerves (a-IV). To develop sense of responsibility for a timeliness and rightness (methodicalness) of clinical inspection of patient with the syndromes of the impressions of olfactory and visual analyzers and syndromes of defeat of oculomotoriuss.

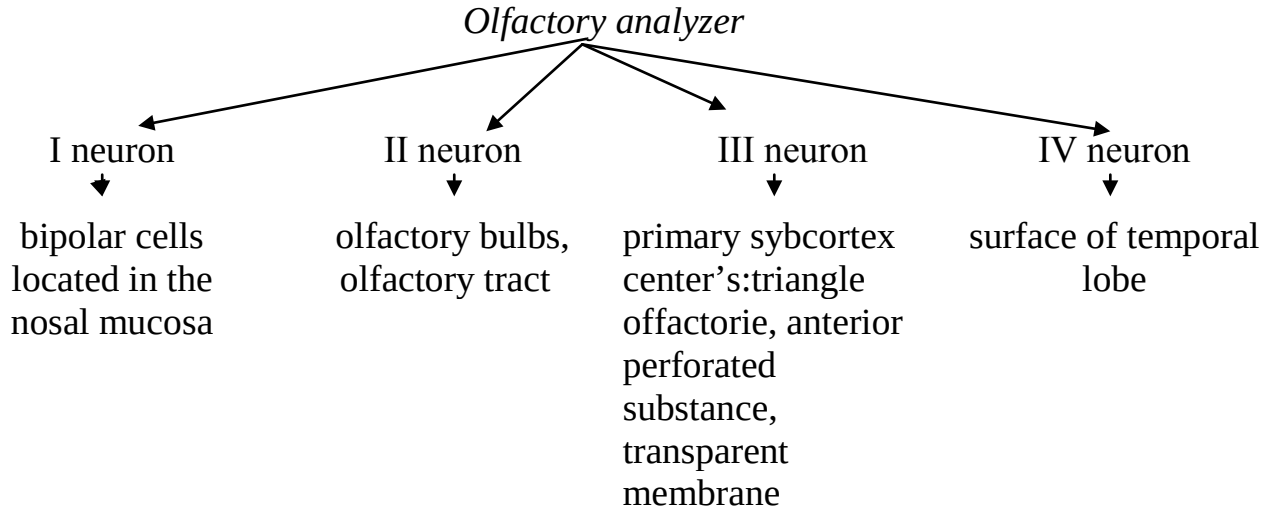
IV. Interdisciplinary integration

Discipline	To know	Able
Previous disciplines		
Normal anatomy	Structure of cortex brain, localization of nucleus I, II, III, IV, VI pair of cranial nerves. Sypracortical centers of olfactory and visual analyzers.	To define the place of location of pathological focus in cerebrum.
Normal physiology	Function of neuron and equipment of nervous impulse	To define a normal function I, II, III, IV, VI pair of cranial nerves
Pathology anatomia	Pathomorphologic changes are in neurons and their acsons at different pathologies.	To forecast possible pathomorphologic changes in neurons and their acsons at the impression I, II, III, IV, VI pair of cranial nerves
Pathophysiology	Changes are in activity of CNS and PNS at different pathologies	To define pathological changes in activity I, II, III, IV, VI pair of cranial nerves
Next disciplines (that provided)		

Neuro-surgery	Initial signs and clinical features I, II, III, IV, VI pair of cranial nerves, which require neuro-surgical interferences	To define a topic diagnosis for to the clinical signs of defeat I, II, III, IV, VI pair of cranial nerves and to define a testimony to the neuro-surgical inspection and treatment
Pediatry	Clinical signs of parafunction I, II, III, IV, VI pair of cranial nerves for the children of early age	To define a topic diagnosis and determined with tactic of additional inspection
Infectious diseases	Clinical signs of parafunction I, II, III, IV, VI pair of cranial nerves at treatment, intoxications, antibiotics	To define tactic of additional inspection and treatment
Intra object integration		
Traumatic, vascular, demyelinisation, infectious (meningitises, meningoencephalitis), oncologic (tumors of CNS) diseases of CNS	Etiologic and clinical features of diseases	To main leading clinical symptoms and syndromes and principles of tactic.
	Diagnostic and therapeutic measures at the exposure of traumatic anamnesis at presence of syndromes of defeat I, II, III, IV, VI pair of cranial nerves	To diagnose trauma of brain is a concussion, coalface of cerebrum, subdural hematoma, subarachnoid hemorrhage, intracerebral hematoma
	Diagnostic and therapeutic measures at the exposure of infectious anamnesis at presence of syndromes of defeat I, II, III, IV, VI pair of cranial nerves	To diagnose meningitises, meningoencephalitis. To determine meningeal signs, analyse information of additional methods of inspection
	Diagnostic and therapeutic	To know the signs of the

	measures at the exposure of intoxication anamnesis at presence of syndromes of defeat I, II, III, IV, VI pair of cranial nerves Diagnostic and therapeutic measures are at the exposure of oncologic anamnesis.	impression of the nervous system at various intoxications. To appoint the additional methods of research.

V. Table of contents of theme of employment



Research method

suggest to smell aromatic separately by every nostril, closing here other

- mint drops
- butter carnations
- vanilla
- anise
- lavender
- almond water
- perfumeries

Symptoms of defeat I pair of cranial nerves and olfactory to the analyzer in general

- the anosmia loss of sharpness of smell
- the hyposmia decline of sharpness of smell
- the hyperosmia increase of sharpness of smell
- a parosmia is declension of smell

It is important to know that:

- possibility to recognize and identify smells testifies to the maintainance of function of crust center of sense of smell
- at the irritation of peripheral department olfactory to the analyzer (olfactory filaments, olfactory way) there can be the phenomena of irritation in the kind of elementary smells
- processes on the basal surface of brain (front cranial fossula) can result in an one-sided loss or decline of smell
- processes in the area of primary olfactory centers result in the origin of bilateral loss or decline of smell
- one-sided processes in a cortex (bend of marine horse) more frequent all cause the easy displays of decline of smell only – anymore expressed on an opposite side
- processes in the temporal lobe of cerebrum can cause olfactory hallucinations (various difficult smells)

Visual analyzer

Peripheral part

- roots and cones
- bipdar cells
- ganglion cells
- optic nerve
- optic chiasm
- optic tract

Central part

- sybcortex centers:
  - lateral geniculate body
  - upper hillocks
  - pillow of thalamus
- bunch of Gratsiole
- crust center of analyzer
  - spur furrow of cervical fate

Type of research

- acuity of visual
- fied of vision the color
- ophthalmoscopy

Examination

Visual acuity

Special tables from 10 rows letters. Patient it is offered to name letters from most to the least from distance 5 meters, checking up the visual acuity for every eye separately.

Norm – the sharpness of sight takes place when an eye is distinguished by two points under the corner of 1° in the distance 5 meters. If the inspected distinguishes 10 lines of letters on a table, both the sharpness of sight is evened 1, if the first row sees only or – 0,1.

Feeling of color

Special colored tables.

Achromatopsia - is the complete ununderstanding of color.

Dischromatopsia - is recognition only of concrete color.

Daltonism - is the innate ununderstanding of color.

Visual field

Checked up for every eye separately by special to the perimeter.

Eye ground

Check up the state of vessels of retina, state of optic disk.

Symptoms of defeat of II pair of cranial nerves and visual to the analyzer in general.

Symptoms of violation of visual acuity:

Amaurosis is a complete loss of eyesight.

Amblyopia is a decline of visual acuity.

Defeat of retina and visile to the nerve result in amaurosis and amblyopia with the loss of direct photoharmose on the proper side.

Symptoms of violation of eyeshots:

A scotoma is a fall of separate area in one of eyeshot's.

Quadrant anopsia – one falling out of four quadrants of eyeshot on both eyes.

Homonymous a hemianopsia is a fall of onenominal parts of eyeshot (right or left).

Heteronymous a hemianopsia is a fall of opposite parts of eyeshot (binasal or bitemporal).

Symptoms of violation of the state of eye ground:

Changes of motion and caliber of vessels of retina.

Papilledema optic disk of visual nerve – at the increased of intracranial pressure

Simple or primary atrophy visile to the nerve.

Second atrophy of visual nerve – more frequent all predefined by the stagnant phenomena or neuritis visile to the nerve.

Retrobulbar neuritis – inflammation visile to the nerve without the damage of optic disk to the nerve.

Oculomotorius

Types of examination of function of nerve:

- ✓ position-finding of eyeballs at peace
- ✓ determination of width of eye slit
- ✓ determination of form of pupils
- ✓ estimation of size of pupils
- ✓ mobility of eyeballs
- ✓ fixation of look is at the extreme taking of eyeballs
- ✓ there is a photoharmose of pupils
- ✓ a reaction of pupils is on an accommodation
- ✓ a reaction of pupils is on convergence

Methods of examination of functions of nerve

- ✓ inspection of eyeballs – eyeballs in a norm are located on a middle line symmetric
- ✓ inspection of eye cracks – in a norm have an identical width
- ✓ determination of form of pupils – in a norm have the rounded form, even
- ✓ estimation of width of pupils – by a review
- ✓ volume of motions of eyeballs – suggest to watch a patient a look after a hammer, which is moved up, down, in sides
- ✓ fixation of look at the extreme taking of eyeballs - suggest to watch a patient a look after a hammer, which is fixed in the extreme adduction
- ✓ the papillary reaction of light:
  - direct – suggest to look a patient in distance, then a doctor closes eyes the hands inspected, which under hands remain opened. A doctor in turn subtracts the hands rapid motions from a person, looking after on the state pupils. Narrowing of pupils under the action of direct light name the direct reaction of puppills on lihgt
  - associated is singing a friendly reaction is looked after at the opened eye in the moment of closing or illumination of the second eye.
- ✓ reaction of pupils on an accommodation – suggest to watch a patient after a hammer which is in the distance 50-60 see from a person. At a look in distance of pupil broaden, and at a look to the close located objects - narrow
- ✓ reaction of pupils on convergence – suggest to look a patient in distance, then to the tag of nose approach the hammer of и ask to look at him. There is bringing eyeballs over to the nose (convergence) and narrowing of pupils.

Nerve thochlear

A type of examination is a volume of motion of eyeballs.

Examination – suggest looking a patient at a hammer which is moved to the down and outside.

Symptoms of defeat of nerve:

- peripheral paralysis – symptoms arise up on an opposite side, because the fibres of nerve do decussation in a front cerebral sail. At a hemilesion there are doublings of

objects at a look downward, limitation of movement of eyeballs downward and outside, strabismus

- a central paralysis does not appear from bilateral cortico-nuclear connections

Nerve abducens

A type of examination is a volume of movement eyeballs at a look outside (right, left).

Examination method – suggest to look a patient at a hammer which is moved outside.

Symptoms of parafunction of nerve:

- peripheral paralysis – at a hemilesion there are doublings of objects at a look in sides, limitation of movements of eyeballs at a look outside, strabismus

- central paralysis does not appear from bilateral cortico- connections

VI. Plan and organizational structure of employment

№	Basic stages of employment, their function and maintenance	Educational aims are in the levels of mastering	Methods of control and studies	Materials of the methodical providing	Time
	I. Preparatory stage				
1. 2. 3.	Organization of employment Raising of educational aims and motivation Control of weekend level of knowledges, skills, abilities: 1). Anatomy and physiologic features of I, II, III, IV, VI pair of cranial nerves; 2). Features of diagnostics of syndromes of defeat of I, II, III, IV, VI pair of cranial nerves; 3). Clinical features of defeat of I, II, III, IV, VI pair of cranial nerves depending on localization of focus (central or peripheral paralysis); 4). Syndromes defeat of olfactory analyzer; 5). Syndromes defeat of visual analyzer; 6). Syndromes of defeat of oculomotorius; 7). Establishment of topic	 I II II II	 Individual questioning; test control of the II level; decision of typical tasks of the II level	Academic of magazine. See the „Educational aims” „Actual of theme Tables, pictures, questions, tests of the II level, typical tasks of the II level	1 2 10

	diagnosis of the impression of NS at the exposure of syndromes of defeat of I, II, III, IV, VI pair of cranial nerves.				
II. Basic stage					
	Forming of professional skills and abilities: 1). To lay hands on the method of leadthrough of collection of complaints and anamnestic information in relation to pathology of I, II, III, IV, VI pair of cranial nerves; 2). Examination of I, II, III, IV, VI pair of cranial nerves, able to interpret their information; 3). To ground to previous and topic diagnosis; 4). To appoint the additional methods of inspection and estimate their results; 5). To ground a final diagnosis in obedience to clinical classifications; 6). To define tactic at the exposure of syndromes of defeat of I, II, III, IV, VI pair of cranial nerves	III III III III III	Methods of forming of skills: professional training decision of tests of II level, typical tasks of II level Methods of forming of abilities: the professional training is in the decision of offtype clinical situations, task of III level	Algorithms are for forming of practical skills Methodical developments. Neurological hammers. Tables. Tests, typical tasks of III level Algorithms for forming professional abilities. Patients. Case history of patient. Situational offtype tasks. Imitation games. Equipment. Information CSF, CT, research MRI.	25
III Final stage					
1. 2. 3.	Control and correction of level of professional abilities and skills Working out the totals employment (theoretical, practical, organizational) Home task (basic and additional literature is on the topic)	III	Methods of control of skills: individual control of practical skills and their results. Analysis and estimation of job performances.	Equipment Results of clinical inspection. Tasks of the III level Test tasks of III of level A reference map is for independent work with literature	5 1 1

VII. Materials of the methodical providing of employment:

1. Materials of control for the preparatory stage of employment.

A question is for control of initial level of knowledges:

1. Where localized I neuron olfactory to the analyzer?
2. Where is a II neuron localized olfactory to the analyzer?
3. Where is a III neuron localized olfactory to the analyzer?
4. Where is a IV neuron localized olfactory to the analyzer?
5. Where localized I neuron visual to the analyzer?
6. Where a II neuron is localized visual to the analyzer?
7. Where a III neuron is localized visual to the analyzer?
8. Where a IV neuron is localized visual to the analyzer?
9. Examination of optic nerve.
10. Examination of n.oculomotorius.
11. Syndrome defeat of n.oculomotorius.
12. Syndrome defeat of n.trochlear and abducens.
13. Visual fields are in a norm.
14. What types of examination must be conducted for the study of the state of III pair of cranial nerves?
15. What types of examination must be conducted for the study of the state of the IV pair of cranial nerves?
16. What types of examination must be conducted for the study of the state of the VI pair of cranial nerves?

Materials are for test control (IIa):

Test 1 is a test with a plural choice

To the neurons olfactory to the analyzer belong:

1. Ganglion cells of schneiderian membrane.
2. Neurons of olfactory bulb.
3. Neurons of primary sybcortical centers.
4. Neurons of medial surface of temporal lobe of brain.
5. Neurons of black substance.
6. Neurons of reticular structure.

Answer: 1,2,3,4.

Test 2 is a test which foresees determination of correct sequence of action from set

In what sequence is it necessary to conduct inspection sick with pathology visual to the analyzer?

1. Visual acuity.
2. Feeling of color.
3. Visual fields.
4. Eye ground.
5. Arterial, pressure, pulse.

Answer: 1,2,3,4,5.

Test 3 – on a substitution or with an answer which is independently constructed

Name the structures of peripheral department visual to the analyzer

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....

Answer:

- Rods and cones
- Bipolar cells
- Ganglia cells
- Visual nerve
- Chiasma
- Visual tract

Typical tasks (II):

1. The man, 59 years, has hemorrhage stroke. Examination: ptosis, diplopia, midriasis, divergent strabismus – right side, left – hemiplegia.

To set:

- Topic diagnosis
- How is this alternate syndrome named?
- General principles of treatment

(Syndrome of Weber's, midbrain)

2. The patient has epidemic encephalitis. Neurology status: divergent strabismus, paralysis of convergentes, accomonodates on the right, opposite side – intention tremor, choreoatetosis.

To set:

- Topic diagnosis
- How is this alternate syndrome named?
- Principles of treatment

(Syndrome of Benedict's, medbrain)

3. A patient after trauma of head had a right homonymous hemianopsia.

To set:

- Topic diagnosis
- What additional methods of examination does it follow to appoint?
- Principles of treatment

(Right visual tract, ophtalmosconia, MRI)

Тести III level

Fill a table: basic differentially diagnostic signs of defeat olfactory, visile analyzers and disfunction of oculomotoriuss and muscles.

Signs	Olfactory analyzer	Visual analyzer	III pair of cr.n.	IV pair of cr.n.	VI pair of cr.n.
Anosmia					
Hyposmia					
Hyperosmia					
Parosmia					
Visual acuity					
Feeling of color					
Achromatopsia					
Dichromatopsia					
Daltonism					
Amavrosis					
Ambliopia					
An account of fingers is near eyes					
Feeling of light is near eyes					
Scotoma					
Quadrant hemianopsia					
Homonymous hemianopsia					
Heteronymous hemianopsia					
Stagnant baby's dummies of visual nerve					
Retrobulbar neuritis of visual nerve					
Ptosis					
Divergent strabismus					
Violation of convergence					
Midriasis					
Cycloplegia paralysis of accomodates					
Symptom of Argyll-Robertson’s					
Diplopia of dowenward					
Limitation of					

oculogyration at a look downward and outside					
Impossibility to take an eye outside					

Fill a table: Basic differentially diagnostic signs of alternating syndromes at the defeat of kernels III and the VI pair of cranial nerves.

Signs	Syndrome of Veber's	Syndrome of Benedict's	Syndrome of Fovilles
A focus is within the limits of leg of brain	+		
A focus is in a pons of brain			+
Divergent strabismus	+	+	
Consilient cross-eye			+
Opposite (contrlateral) hemiparesis/plegia	+		
Contrlateral choreoathetosis and intention tremor		+	
Diplopia			+
Peripheral paresis of mimic muscles			+

7. Materials of the methodical providing are for the basic stage of employment

№	Task	Pointing	Notes
1.	To lay hands on the method of examination of patients with the purpose of to find out pathology I, II, III, IV, VI pair of cranial nerves. To conduct examination of patients with the symptoms of defeat I, II, III, IV, VI pair of cranial nerves.	To execute the inspection of patients in such sequence: 1. To collect complaints, anamnesis of illness and life carefully 2. To conduct the external review of patient 3. To examination somatic status 4. To examination neurological status	To pay regard to rates of development of complaints, reasons, circumstances, that preceded them. To take into account the general state, presence of symptoms of focus defeat of the nervous system. Group found out signs with formulation of leading clinical syndromes. To pay regard to information in general lines clinical and

			additional methods of research
2.	To set clinical and topic diagnosis, to define the plan of treatment	On the basis of found out symptoms to ground a topic diagnosis, formulate a clinical diagnosis	Able to appoint the additional methods of inspection and ground their necessity

3 Materials of control for the final stage of employment.

Offtype tasks (level III)

1. The patient headache of pulsating character appeared with an unvarnished syphilis, noise in a head, dizziness. At ophalmosconia found out binacal heteronymous hemianopsia.

To set:

- Clinical syndrome.
- Additional methods of examination.
- Tactic of conduct sick

(A focus on the basale surface of brain, a leading clinical syndrome is a defeat of visual analyzer in the area of chiasma. RW, RIF, RIBT in blood and creative ptotein, X-ray of the Turkish saddle, MRI of brain)

2. The patient during getting up of weight great headache which was accompanied by vomit appeared suddenly. Neurology status: cross-eye, neck stiffness, psychic excitetment.

To set:

- Topic and syndromologic diagnosis.
- Additional methods of inspection.
- Tactic of conduct sick, therapeutic measures

(Defeat of the VI pair of cranial nerves, meningeal syndrome. CSF, MRI, angiograhia).

Test of III level (qualification)

Fill a table: symptoms of defeat And, II, III, IV, VI pair of cranial nerves

Signs	Olfactory analyzer	Visual analyzer	III pair of cr.n	IV pair of cr.n	VI pair of cr.n
To identify violation of sense of smell and ability smells	+				
Presence of olfactory hallucinations	+				

Changes of visual acuity, feeling of color, change of visual fields.		+			
Changes are on an eye ground		+			
Symptoms of the impression of m. levator palpebre superior, upper, internal, lower direct oculomotor muscles and lower slanting, violation of accommodation and convergence			+		
The alternate syndrome of Weber's is included by a defeat			+		
Symptom of Argyll-Robertson's			+		
Diplopia at a look downward				+	
Consilient cross-eye					+
The alternate syndrome of Foville's is included by a defeat					+

4. Materials of the methodical providing of самоідготовки of students: a reference map is for organization of independent work of students with educational literature.

№	Basic tasks	Pointing
1.	What types of researches must be conducted for the exposure of defeat I, II, III, IV, VI pair of cranial nerves?	Name the types of research I, II, III, IV, VI pair of cranial nerves
2.	Features and displays of defeat olfactory, visual analyzers	To transfer the basic diagnostic signs of defeat olfactory, visual analyzers
3.	Features and displays of the impression of oculomotoriuss	To transfer the basic diagnostic signs of defeat III, IV, VI pair of cranial nerves
4.	What are alternate syndromes accompanied by a defeat III, VI pair of cranial nerves?	To transfer alternate syndromes
5.	What methods instrumental-laboratory diagnostics does it follow to use for pathology I, II, III, IV, VI pair of cranial nerves?	To transfer methods instrumental-laboratory diagnostics
6.	Copulas of symptoms of dysfunction I, II, III, IV, VI pair of cranial nerves from the topic focus of defeat of the nervous system	Able to set topic and syndromology diagnosis

Theme: „Trigeminal, facial, vestibule-cohlearis cranial nerves symptoms of their defeat”

I. Actuality of theme

Signs of defeat V, VII, VIII pair of cranial nerves observed in the case of different neurological diseases – leptomeningitis of cerebello-pontine angle, barrel encephalitis, tumors and encephalopyosis, poliomyelitis, dissipated sclerosis, vascular diseases of cerebrum, craniocerebral traumas. Otolaryngologists, stomatology, pediatricians, infectious diseases specialist, meet with the defeat of these nerves. Knowledge's of anatomy and pathology of these cranial nerves are needed for timely diagnostics of many diseases.

II. Educate aims

A student must **know:**

- anatomy, function and symptoms of defeat V, VII, VIII pair of cranial nerves;
- alternate pons' syndromes.

A student must **be able:**

- examination sensory and motor functions of trigeminal nerves;
- examination the motor, parasympathetic and taste functions of facial nerve;
- to inspect auditory and vestibular functions;
- on the basis of found out pathological symptoms to define localization of pathological process.

III. Educate aims

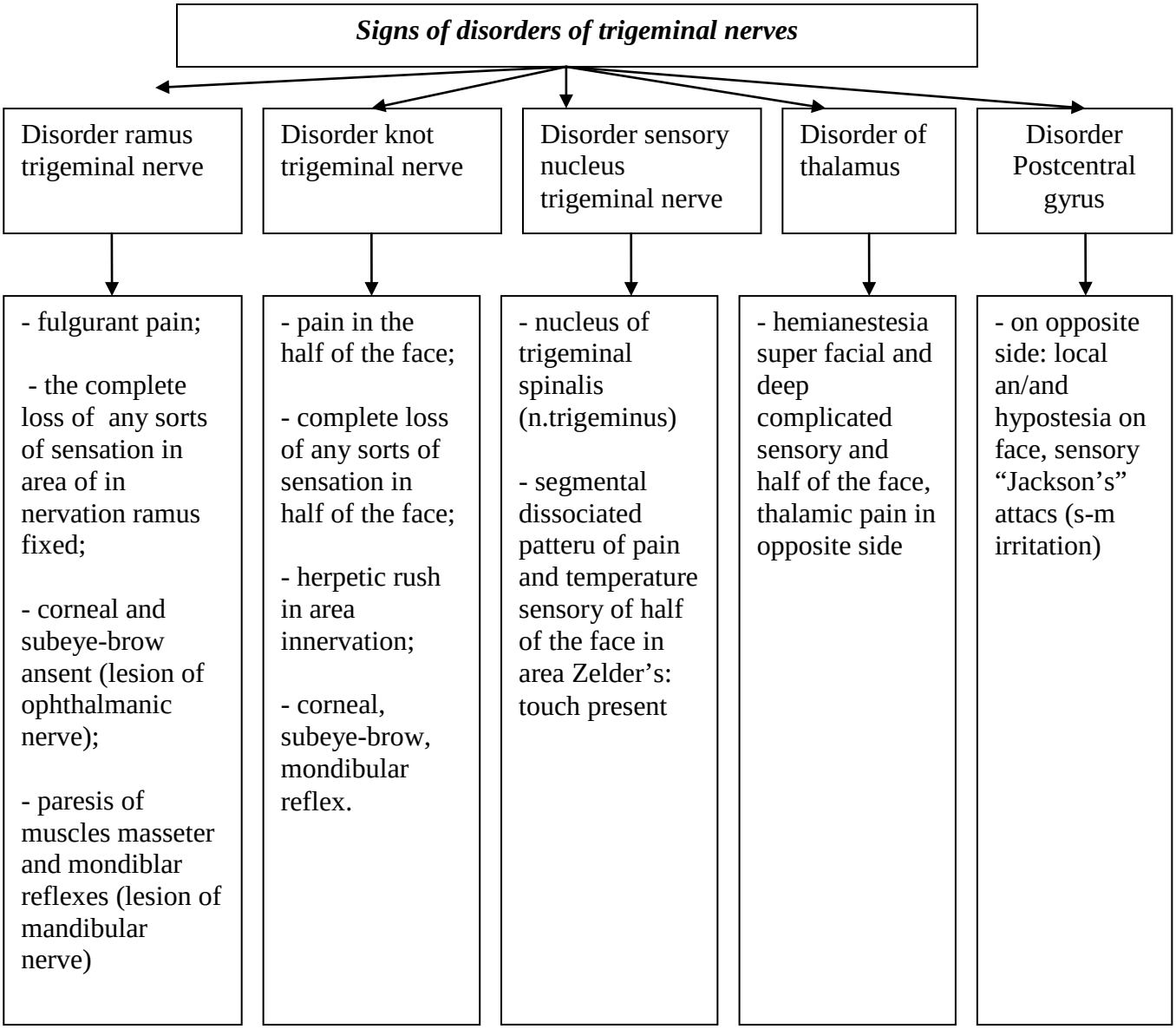
To form for students sensitive, benevolent attitude toward a patient. Take possession on ability to set a psychological contact with a patient, attentively and carefully to conduct an inspection in the case of presence at sick pain, decline of ear, violation of motions of mimic muscles.

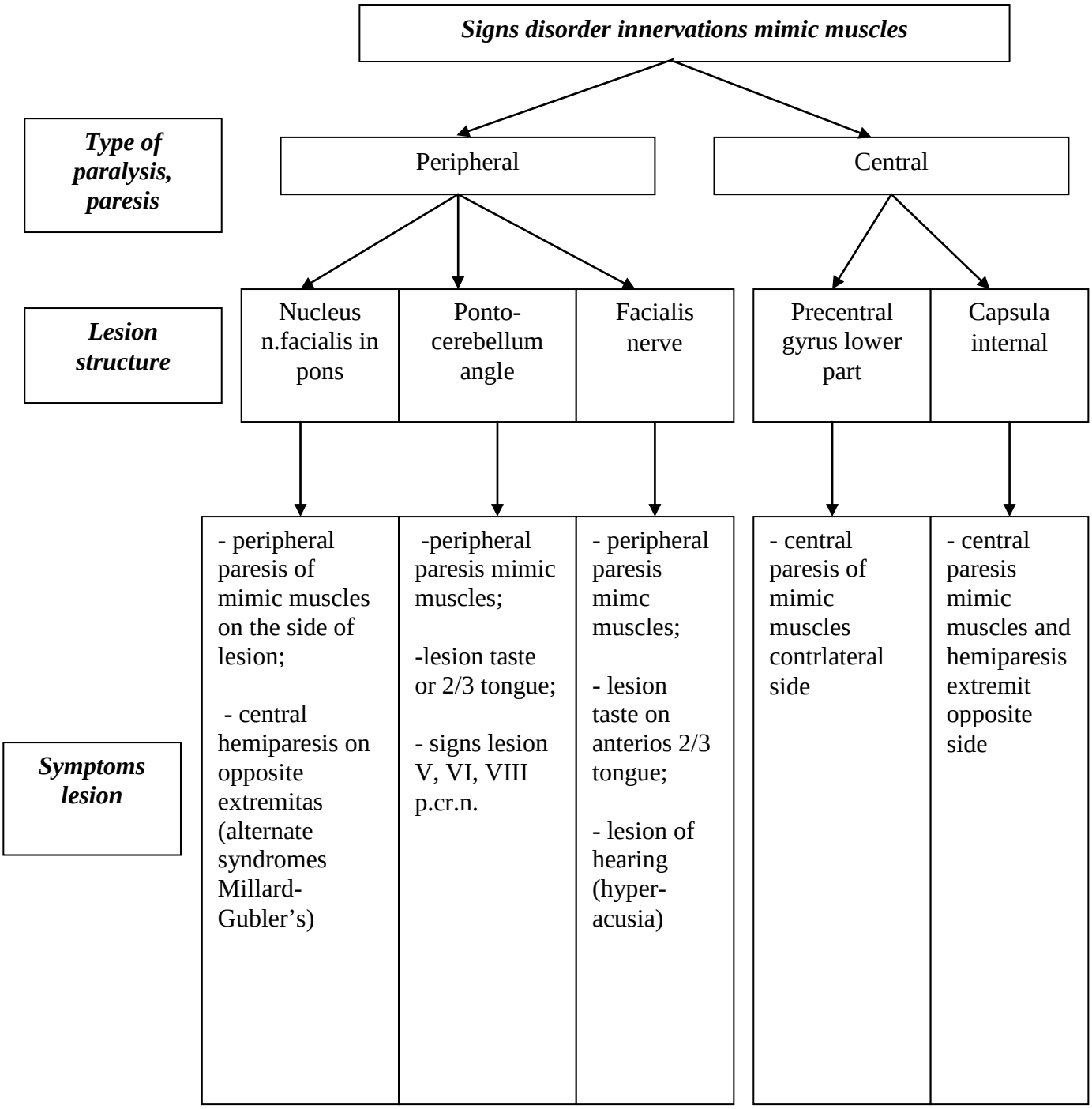
IV. Interdisciplinary integration

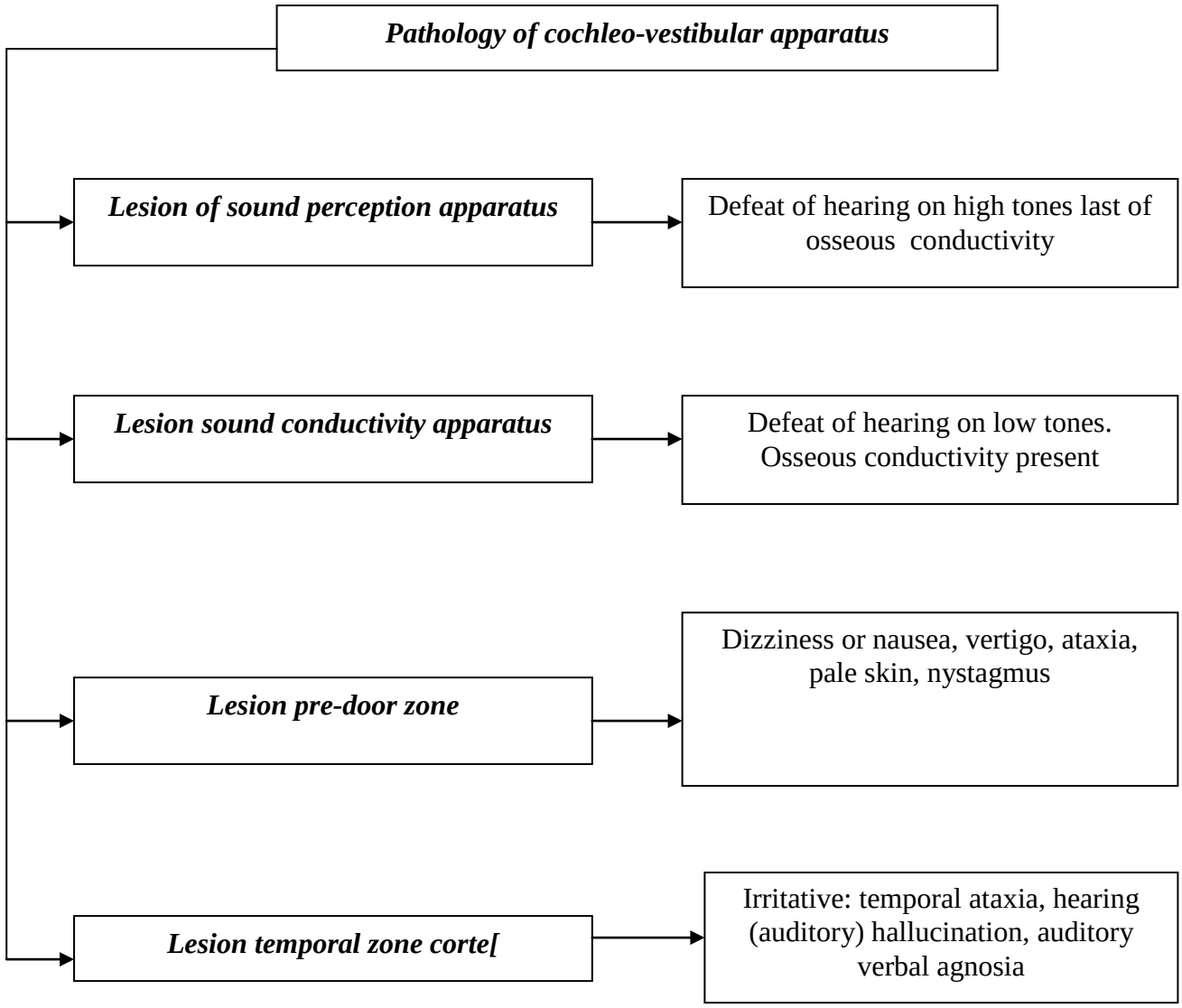
Disciplines	To know	Able
Previous disciplines		
Normal anatomy	Structure of pons' of cerebrum and cranial nerves.	To draw a scheme of pons of cerebrum, localization of nucleus V, VII, VII p.cr.n. and also to draw a path of nerves and sypranuclearis ways
Histology	Histological information about the structure of nucleus, roots V, VII, VIII pair of cranial nerves, leading	Microscopically to distinguish motor, sensory nucleus, roots, nerves, ways.

	ways brain a pons cerebrum.	
Normal physiology	Physiology of the auditory sensory system, mechanism of transmission of voice vibrations. Physiology of vestibular analyzer.	To draw the scheme of connections between the nucleus of cranial nerves, cortical centers, peripheral structures.
Pathoanatomy	Patomorfologichni changes in the case of defeat of nucleus and roots V, VII, VIII pair of cranial nerves.	Microscopically to distinguish pathology of bodies of neurons and roots of cranial nerves.
Next disciplines (that provided)		
Neuro-surgery	Pathology V, VII, VIII pair of cranial nerves for patients with the tumors of brainstem and cranio-cerebral traumas	To finding out a defeat V, VII, VIII pair of cranial nerves for patients with the tumors of ponto-cerebellum angle, brainstem, by the traumas of cerebrum.
Infectious diseases	Pathology V, VII, VIII pair of cranial nerves at presence of meningitises, encephalitis, to poliomyelitis.	To finding out a defeat V, VII, VIII pair of cranial nerves in the case of encephalitis, meningitises, and poliomyelitis.
Otolaryngology	Pathology V, VII, VIII pair of cranial nerves in the case of otolaryngology diseases	To conduct differential diagnostics of defeat of the VIII pair at presence of pathology of the nervous system and in the case of otitis, to differentiate pains in the area of face.
Intra object integration		
Tumors	Signs of defeats V, VII, and VIII pair of cranial nerves in the case of brain-tumors.	To finding out pathology V, VII, and VIII pair of cranial nerves in the case of brain-tumors.
Defeat of the peripheral a nerve system	Symptoms of defeat V, VII, VIII pair of cranial nerves in the case of neuropathic.	To finding out pathology V, VII, VIII pair of cranial nerves at presence of neuropathic
Infectious defeats of nerve system	Signs of defeat V, VII, VIII pair of cranial nerves in the case of infectious diseases.	To finding out pathology V, VII, and VIII pair of cranial nerves in the case of meningitises, diphtheritic polyneuropathia, to poliomyelitis.

V. Table of contents of theme of lesson




Signs disorder innervations mimic muscles
Type of paralysis, paresis
Peripheral
Central
Lesion structure
Nucleus n.facialis in pons
Ponto-cerebellum angle
Facialis nerve
Precentral gyrus lower part
Capsula internal
Symptoms lesion
- peripheral paresis of mimic muscles on the side of lesion;
- central hemiparesis on opposite extremitas (alternate syndromes Millard-Gubler's)
-peripheral paresis mimic muscles;
-lesion taste or 2/3 tongue;
- signs lesion V, VI, VIII p.cr.n.
- peripheral paresis mimc muscles;
- lesion taste on anterios 2/3 tongue;
- lesion of hearing (hyper-acusia)
- central paresis of mimic muscles contrlateral side
- central paresis mimic muscles and hemiparesis extremit opposite side


Pathology of cochleo-vestibular apparatus
Lesion of sound perception apparatus
Defeat of hearing on high tones last of osseous conductivity
Lesion sound conductivity apparatus
Defeat of hearing on low tones. Osseous conductivity present
Lesion pre-door zone
Dizziness or nausea, vertigo, ataxia, pale skin, nystagmus
Lesion temporal zone corte[
Irritative: temporal ataxia, hearing (auditory) hallucination, auditory verbal agnosia

VI. Plan and organizational structure of lesson

	Basic stages of employment, their function and maintenance	Educational aims are in the levels of mastering	Methods of control and studies	Materials of the methodical providing	Time
I. Preparatory stage					
1	Organization of lesson.			Academic of magazine. See the „Educational aims" „Actual of theme	1
2	Determination of educational aims and motivation.				2
3	Control of initial level of knowledges: ① Anatomy and functions V, VII, VIII pair of cranial nerves. ② Symptoms of defeat V, VII, VIII pair of cranial nerves and their connection on different levels. ③ Alternating syndromes are in the case of defeat of pons'.	II	Individual questioning; test control of the II level; decision of typical tasks of the II level	Tables, pictures, questions, tests of the II level, typical tasks of the II level	5
II. Basic stage					
4.	Forming of professional skills and abilities. ① to lay hands on the method of inspection of functions V, VII, VIII pair of cranial nerves. ② To inspect patients with pathology V, VII, VIII pair of cranial nerves. ③ On the basis of found out symptoms to conduct differential diagnostics and specify the level of defeat.	III	The practical training is in working off skills; the professional training is in the decision of offtype clinical situations.	Patients, hospital charts. Professional algorithm for a capture skills and ability inspections sick with pathology V, VII, VIII pair of cranial nerves.	30
III. Final stage					
5.	Control and correction of level of professional skills and abilities.	III	Individual control of practical	Patients. Offtype situational	5

			skills, estimation of clinical job performances. Decision of offtype tasks of the III level.	tasks of the III level.	
6.	Discussion of results of examination.				
7.	Working out the totals of practical lesson.				1
8.	Home task			A card is oriented for independent work with literature	1

VII. Materials of the methodical providing of lesson

1. Materials of control for the preparatory stage of lesson.

A question is for the verbal questioning.

1. Where are nucleus located V, VII, VIII pair of cranial nerves?
2. Name the places of roots of counterfoils V, VII, VIII pair of cranial nerves.
3. What sensory functions are executed by a trigeminal nerve?
4. What muscles of innervations by a trigeminal nerve?
5. What muscles of iinnervations by a facial nerve?
6. What reflexes are provided VII and VIII pair of cranial nerves?
7. From the defeat of what nerves is violation of taste anterios on front 2/3 languages?
8. When is central paresis of mimic musculature?
9. Describe the alternating syndromes of Millard-Gubler's.
10. Describe the alternating syndromes of Foville's.
11. What structures do behave to the subcortical centers of ear?
12. How to conduct the Weber's tests and Rinne's test?
13. What structures do behave to the vestibular apparatus?
14. Describe the syndrome of ponto-cerebellum angles.

Tests and typical tasks of the II level

Tests of the II level

	Tests of the II level	Standard of answer
1.	Mark, what symptoms a defeat shows up: a) paresis of mastication muscle; b) paresis of mimic muscles; c) the herpetic pouring out is on face; d) sensory defeat on dissocial in the area Zelder's	c), e)

	e) violation of all of types of sensitiveness is on face.	
2.	Sensory disorders of dissociated of sensitiveness on the face: a) branches of trigeminal; b) internal capsule; c) lower department of postcentral gyrus; d) knot of trigeminal; e) kernels of spinal highway of trigeminal.	e)
3.	Specify the symptoms of defeat of facial nerve after an exit from the styloimastoid apertures (canal): a) peripheral paresis of mimic muscles; b) central paresis of mimic muscles; c) гіперакузія; d) loss of taste on front 2/3 languages; e) lacremation.	a), d)
4.	Name the signs of defeat of ponto-cerebellum angle a) peripheral paresis of mimic muscles; b) hearing loss; c) hyperacusia; d) central paresis of mimic muscles; e) pain and loss of all of types of sensitiveness is on face; f) to the cerebellum of violation on the side of focus; g) to the cerebellum of violation on a side, opposite focus; h) loss of taste on front 2/3 languages.	a), b), e), f), h)

Typical tasks of the II level

	Typical tasks of the II level	Standard of answer
1.	Motions of right half of face is absent lagophthalmos a patient. What type of paresis? What examination is needed? What structures is defeat?	Peripheral paresis of muscles of right half of face. In the case of defeat of facial nerve and his nucleus. For clarification of level of defeat it is exams of taste, hearing, lacrimation and presence of paresis's of extremities.
2.	For a patient after flu attacks pains appeared with violation of all of types of sensitiveness in the area of brow business. What nerve is defeat? What reflexes can disappear?	Optic nerve, trigeminal. Coreal, conjunctival, superciliary reflexes.
3.	On a background acute pain in the area of innervation of I of branch of counter-clockwise trigeminal an herpetic rash appeared on a forehead and near a left eye. What disorders?	
4.	Man the great while was in-cold. On the	

	second day patient has left eye into closed, lacrimation, hyperacusia there is violation of taste on 2/3 parts of language. Objectively: absence of left corneal reflex, paresis of left lower part face in left muscles/ What nerve is staggered? What character of paralysis?	
5.	At the sick loss of ear, peripheral paresis of mimic muscles, pain and loss of sensory in the left half of face. On the right is a hypotaxia, to the left is spastic of extremities. Where localized pathologic focus?	

2. Materials of the methodical providing of the basic stage of lesson..

Professional algorithm of forming of skills and abilities inspections sick with pathology V, VII, VIII pair of cranial nerves.

	Task	Pointing	Notes
1.	Inspection of functions V, VII, VIII pair of cranial nerves. To inspect patients with pathology V, VII, VIII pair of cranial nerves.	Execute in such sequence. *Examination of functions of the V pair:* 1) To inquire for the presence of pain, paresthesias on face. 2) At a review to pay a regard to vegetative disorders on face, presence of herpeticrashes. 3) To find out pain at pressure into places of output of branches of nerve on face. 4) Examination a superficial sensitiveness on face. 5) Examination superciliary, corneal, conjunctival, mandibular reflexes. 6) Examination the function of masticatory musculature. *Research of function of the VII pair:* 7) To estimate symmetry of face in a spacehold and at implementation of mimic motions. 8) Examination superciliary,	To specify character, periodic, localization, prevalence of pains that presence of procatarxiss. I branch – foramen supraorbitalas II branch - foramen supraorbitalas III branch - foramen mentalis. To define a superficial sensitiveness separately in the areas of innervation of branches of the V pair in the areas of Zelder's. In the case of absence of the expressly expressed asymmetry pay a regard to symmetry of blinking, to check up the presence of symptom „never". In the case of absence of

		corneal, conjunctival reflexes. 9) To check up the maintainance of the taste feelings on front 2/3 languages, lacrimation, presence of increase or loss of hearing. *Research of function of the VIII pair:* 10) To inquire for the presence of complaints about dizziness, ataxia, noise in a whisker, decline of ear. 11) Examination the acuity auditorytests of Weber's and René. 12) Examination up the presence of nystagmus, co-ordinating tests.	dacryagogue to eliminate the presence of dryness of eye. Examination the sharpness of ear: perception of whisper and speech lond language. By tuning-fork tests to differentiate the defeat of sound perception and sound conductivity apparatus.
2.	On the basis of found out pathologic symptoms to set a topic diagnosis.	Group found out symptoms and avail structures by the logical scheme of maintenance for establishment of level of defeat.	

3. Materials of control for the final stage of lesson.

Offtype tasks of the III level.

	Offtype tasks of the III level	Standard of answer
1.	For a patient mimic motions of left half of face are limited, pain and blister rashes on the skin of external acoustic duct. What structures are staggered? What character of paresis of mimic muscles? What reflexes can disappear?	Defeat of facial nerve and knee knot. Peripheral paresis of mimic muscles. Superciliary, corneal, conjunctival
2.	A patient grumbles about great attacks pains in a face to the left. An origin binds pains to stress. In neurologic status: absent of pain and temperature sensitiveness of person on the left. Conjunctival, absent, superciliary reflexes. During an inspection there was an attack: a patient cried out, detained breathing, face red, a lacrimation appeared. Attacks lasted 30 minutes. What structures did suffer? Where is a focus of defeat?	
3.	A patient grumbles about a weakness in left extremities, asymmetry face on the right. In neurologic status: peripheral paralysis of mimic muscles on the right; syndrome of Bell's, symptom of „sail". On the left is a central paralysis in counter-clockwise extremities. What structures did suffer? Where is a focus of defeat?	

4.	The sick grumbles about noise in an ear, dizziness. In neurologic status: horizontal nystagmus, ataxia in the test of Romberg's. What structure did suffer? Where is a focus of defeat?	

4. Materials of the methodical providing of самопідготовки of students

The card of independent work is oriented with literature.

Basic tasks	Pointing
To learn	To draw scheme disposition nucleus, of motive and sensible ways V, VII, VIII pair of cranial nerves and their bond.
Anatomy, function V, VII, VIII pair of cranial nerves.	
Method of research of functions V, VII, VIII pair of cranial nerves.	To write the symptoms of defeat of these nerves in a notebook. To make the table of differential diagnostics of different levels of defeat.
Symptoms of defeat V, VII, VIII pair of cranial nerves.	
Alternate syndromes of pons.	

Theme: „Pathology IX, X, XI, XII pair of cranial nerves. Bulbar and pseudobulbar syndromes"

I. Actuality of theme

Signs of defeat IX, X, XI, XII pair of cranial nerves can be observed in the case of different neurological diseases – tick and barrel encephalitis, lateral amyotrophic sclerosis, poliomyelitis, diphtheria polyneuropathy, tumors, syringobulbia, strokes, craniocerebral traumas. With the defeat of these nerves otolaryngologist meet at presence of inflammatory processes in the area of vocal connection, tumors of larynx, and also pediatricians, infection, neuro-surgeons. Knowledge of anatomy and pathology of these nerves, ability to differentiate bulbar and pseudobulbar syndromes need the doctors of different specialities for timely diagnostics of diseases, majority from which needs the first aid.

II. Educational aims

A student must **know:**

- Anatomy, function and symptoms of defeat IX, X, XI, XII pair of cranial nerves (a=II).
- Displays and differential diagnostics of bulbar and pseudobulbar (a=II).

A student must **be able:**

- To probe functions IX, X, XI, XII pair of cranial nerves (a=III).
- To find out the symptoms of defeat of these nerves (a=III).
- To diagnose the signs of bulbar and pseudobulbar syndromes (a=III).
- On the basis of the clinical finding to set a topic diagnosis (a=III).

III. Educate aims

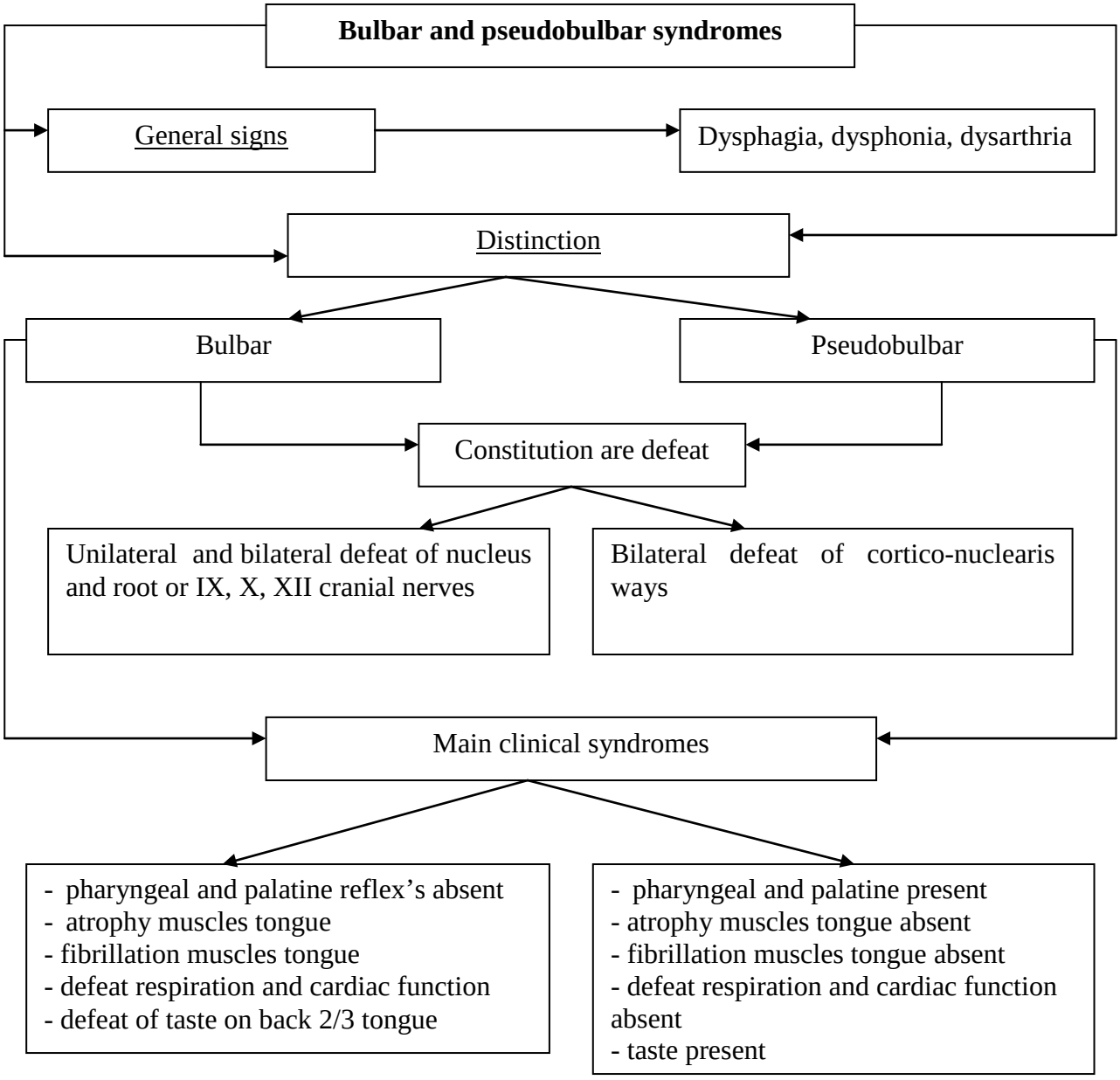
Take possession on ability to set a psychologic contact with patients, attentively and carefully to conduct an inspection in the case of presence for the patient's bulbar and pseudobulbar syndromes. To form sympathy to the patients with bulbar violations.

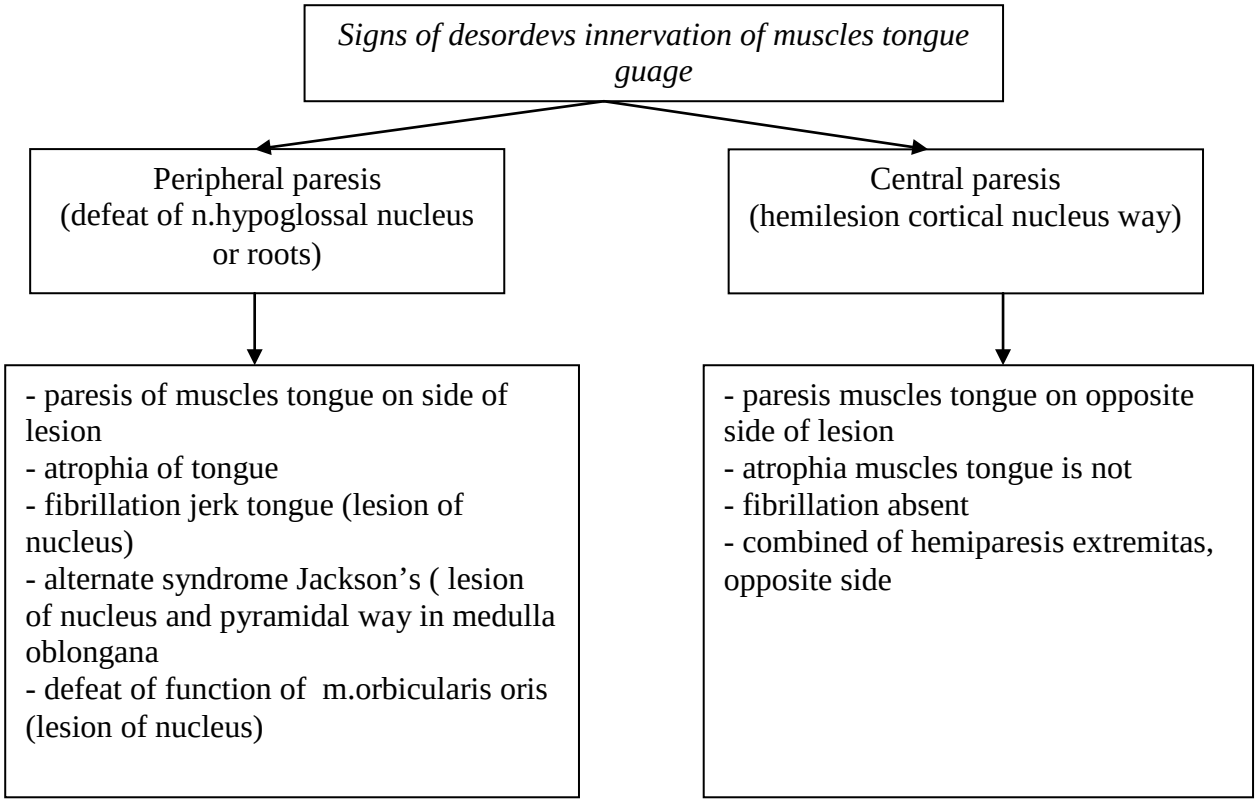
IV. Interdisciplinary integration

Disciplines	To know	Able
Previous disciplines		
Normal anatomy	Structure of barrel of cerebrum and cranial nerves of bulbar group.	On a plaster cast and charts to rotin the brain steam, place of finding of nucleus IX, X, XI, XII pair of cranial nerves and their counterfoils.
Patalogic anatomy	Pathomorphological changes are in the case of defeat of cranial nerves	Microscopically to distinguish pathology IX, X, XI, XII pair

	of bulbar group.	of cranial nerves and their kernels.
Histology	Histological information about the structure of nucleus, counterfoils and nerves of bulbar group, leading ways brain a barrel.	Microscopically to distinguish motive, sensible, vegetative nucleus, counterfoils IX, X, XI, XII pair of cranial nerves
Next disciplines (that provided)		
Infectious diseases	Pathology IX, X, XI, XII pair of cranial nerves, sign of bulbar syndrome at presence of infectious diseases	To find out the symptoms of defeat IX, X, XI, XII pair of cranial nerves or their nucleus in the case of tick, of encephalitis, to poliomyelitis, diphtherial polyneuropathy.
Neurosurgery	Pathology IX, X, XI, XII pair of cranial nerves at presence of by volume processes in the area of brainstem, in the case of craniocerebral traumas.	To find out the symptoms of defeat of cranial nerves in the case of tumors of brainstem, craniocerebral traumas.
Otolaryngology	Pathology IX, X, XI, XII pair of cranial nerves for the patients of LOR by diseases.	To find out pathology IX, X pair of cranial nerves for patients with the tumors of pharyngeal, paresis's of larynx, vocal connection.
Intra object integration		
Brain steam	Patients have symptoms of defeat of cranial nerves of bulbar group with brain steam.	To find out pathology IX, X, XI, XII pair of cranial nerves for patients with brain steam.
Syringomyelia, amyotrophic lateral sclerosis	Signs of bulbar syndrome are in the case of amyotrophic lateral sclerosis, syringomyelia	To differentiate a defeat IX, X, XI, XII pair of cranial nerves, determine diagnosis of amyotrophic lateral sclerosis, syringomyelia
Infectious defeats of nervous system	Pathology of cranial nerves of bulbar group for infectious patients	To find out the symptoms of defeat of bulbar group of cranial nerves at presence of tick encephalitis, diphtherial polyneuropathy.
Vascular nervous diseases	Pathology IX, X, XI, XII pair of cranial nerves for patients with cerebrovascular pathology	To differentiate bulbar and pseudobulbar syndromes, to find out the alternal syndromes of prolate brain for the patients of ñ vascular violations of cerebrum.

V. Table of contents of theme of employment





VI. Plan and organizational structure of lesson

№	Basic stages of employment, their function and maintenance	Educational aims are in the levels of mastering	Methods of control and studies	Materials of the methodical providing	Time
I. Preparatory stage					
1.	Organization of lesson.			Academic of magazine. See the „Educational aims" „Actual of theme	1
2.	Determination of educational aims and motivation.				2
3.	Control of initial level of knowledges: - anatomy and function IX, X, XI, XII pair of cranial nerves; - symptoms of defeat of nerves of bulbar group; - displays and differential diagnostics of bulbar and pseudobulbar syndromes;	II	Individual questioning; test control of the II level; decision of typical tasks of the II level	Tables, pictures, plaster casts, questions for the verbal questioning, tests of the II level, typical tasks of the	10

	- alternate syndromes of oblangata brain.			II level	
II. Basic stage					
4.	Forming of professional skills and abilities: - to lay hands on the method of research of functions of nerves of bulbar group; - to find out the symptoms of defeat of these nerves; - to find out the signs of bulbar and pseudobulbar syndromes; - on the basis of findings to define localization of pathologic process	III	The practical training is in working off skills; the professional training is in the decision of offtype clinical situations.	Patients, hospital charts. Professional algorithm for a capture skills and ability inspections sick with pathology IX, X, XI, XII pair of cranial nerves.	25
III. Final stage					
5.	Control and correction of level of professional skills and abilities.	III	Individual control of practical skills, estimation of clinical job performances. Decision of offtype situations tasks of the III level.	Patients. Offtype situations tasks of the III level.	10
6.	Working out the totals of practical employment.			A card is oriented for independent works are with literature	1
7.	Home task				1

VII. Materials of the methodical providing of employment

1. Materials of control for the preparatory stage of employment.

A question is for the verbal questioning.

1. Where are nucleus located IX, X, XI, XII pair of cranial nerves?
2. Describe motion of cranial nerves of bulbar group.
3. Describe the functions of cranial nerves of bulbar group.
4. How a function is probed IX, X, XI, XII pair of cranial nerves?
5. Give description of peripheral and central paresis's of muscles of tongue.

6. Describe bulbar and pseudobulbar syndromes.
7. Describe the signs of defeat of the XI pair of cranial nerves.
8. Name and give description of alternate syndromes of medulla oblongata.

Tests and typical tasks of the II level

	Tests of the II level	Standard of answer
1.	Specify localization of focus in the case of central paresis of muscles of tongue: a) lower department of precentral gyrus; b) cortico-nuclear way; c) nucleus of hypoglossus; d) hypoglossus nerve; e) glossopharyngeal nerve.	a), b)
2.	Name the signs of bulbar syndrome: a) reflexes of oral automatism b) dysphagia; c) disartria; d) dysphonia; e) pharyngeal reflex is present; f) pharyngeal reflex absents; g) atrophy of muscles of tongue; h) absence of atrophies of muscles of tongue	b), c), d), f), h)
3.	Name the signs of pseudobulbar syndrome: a) atrophy of muscles of tongue; b) fibrillation jerk of muscles of language; c) dysphagia; d) dysphonia; e) pharyngeal reflex absents; f) disartria; g) reflexes of oral automatism; h)divergent squint; i) weeping and laughter is violent.	c), d), f), g), i)
4.	Name the signs of alternate syndrome of Wallenberg's-Zakharchenko: a) reflexes of oral automatism; b) weeping and laughter is violent; c) peripheral paresis of soft palate and vocal cords is on the side of focus d) violation of sensitiveness is on a segmental type on face; e) violation of sensitiveness is on face on a peripheral type; f) syndrome of Bernard's-Horner's; g) an conductive hemianesthesia is from an opposite side; h) to the cerebellum of violation on the side of focus;	c), d), f), h), g)

	i) to the cerebellum of violation from an opposite side.	

Typical tasks of the II level

	Typical tasks of the II level	Standard of answer
1.	Patients have atrophy of right half of language, rejection of him at pulling out from a mouth to the right and central hemiparesis on the left. Where is a focus of defeat? What defeat? How is a syndrome name?	In a medulla obblongata. Staggered nucleus of the XII pair and pyramid ways business. Alternate syndrome of Jackson's
2.	Patients have dysarthria, disphonia, disphagia, atrophy and fibrillation jerk muscles of language, violation of breathing and cardiac activity, pharyngeal reflex absents. What character of paresis of muscles. How is this syndrome named?	Peripheral paresis. Bulbar syndrome.
3.	Patients have out violation of taste on back third of language on the left. What cranial nerve and from what part defeat? What reflexes can change?	The IX pair is defeat on the left. Pharyngeal and palatal reflexes go down.

2. Materials of the methodical providing of the basic stage of lesson.

Professional algorithm of forming of skills and abilities inspections sick with pathology IX, X, XI, XII pair of cranial nerves.

	Task	Pointing	Notes
1.	Take possession methodic IX, X, XI, XII pair of cranial nerves. Examination of patients.	To execute an inspection in such sequence: 1) to probe functions IX and X pair – to estimate sonority of voice, probe the function of swallowing, location of soft palate in a state of rest and at phonation, to check up pharyngeal and palatal reflexes, taste on back third of language, frequency of breathing and pulse; 2) to probe the function of the XI pair – to estimate the function of sterno-cleido-mostoideus and trapezoid muscles by the exposure of atrophia, estimation of volume of active motions	Research IX and X pair it is expedient to conduct together, so as they have general kernels, often struck simultaneously.

		and muscular force of these muscles; 3) to probe the function of the XII pair – to pay a regard to mobile and deviation tongue, presence of atrophia, fibrillation jerk of his muscles, dysarthria, to probe the function of orbicular muscle of mouth; 4) to check up the presence of symptoms of oral automatism, violent a laughter or cry; 5) to inspect a reflex motive, sensible function, function of cerebellum with the purpose of exposure of alternate syndromes.	
2.	On the basis of found out pathological symptoms to set a topic diagnosis	Group exposure symptoms, to analyze them, set a syndrome and define localization of pathological process.	Pay attention on need of differential diagnostics bulbar, pseudobulbar and alternate syndromes.

3. Materials of control for the final stage of lesson.

Offtype tasks of the III level.

	Offtype tasks of the III level	Standard of answer
1.	A patient, 60 years, suddenly, on a background the increase of AT, head pain, vomit, appeared, swallowing was violated, voice changed. Found out on the left an pharyngeal, narrowing of an eye crack, miosis, hypalgesia of superficial types of sensitiveness on face on a segmental type. The handle of soft palate hangs down at phonation; oesophageal reflex is mionectic, ataxia in counter-clockwise extremities. Right – explorer pain and temperature hemihypostesia. Where localization of pathologic process? Name a pathologic syndrome. What disease does he arise up in the case of?	Defeat of counter-clockwise half of prolate brain, cerebellum. Syndrome of Wallenberg's-Zakharchenko. In the case of sharp violation of cerebral circulation of blood in a back lower cerebellum artery.
2.	The sick 50 years during the last year had a weakness in hands, a speech changed, swallowing was violated. Found out nasal voice, dysarthria, dysphagia. The handles of soft palate hang down at фонації. Pharyngeal reflex absents. Atrophy of muscles of tongue and fibrillation jerk in them. Hypotrophy of muscles of humeral belt, shoulders, forearms, atrophy	Bulbar nuclear syndrome; tetraparesis (on the mixed type in hands, on a central type in feet). Motive nucleus IX, X, XII pair of cranial nerves in a prolate brain and front horns and

	of shallow muscles of brushes with fibrillation jerk. Reflexes from hands and feet are increse, symptom of Babinski's on either side. What syndrome did arise up at sick? Specify localization of pathologic process.	lateral ropes in a spinal cord at the level of neck department.
3.	For a patient after a review found out dysarthria, dysphagia, dysphonia, pharyngeal reflex absents; at phonation the handles of soft palate hang down. Atrophy of muscles of language and fibrillation jerk is in them. Name a syndrome.	Bulbar syndrome.
4.	A patient grumbles about violation of swallowing, changes of voice, violation of speech. Objectively: dysarthria, dysphagia, dysphonia, pharyngeal reflex high. Atrophy of muscles of tongue is not. Violent weeping and laughter. Central hemiparesis of opposite side extremities. Name a syndrome. Where is a defeat?	Pseudobulbar syndrome. A bilateral defeat of cortico-nuclear ways is in a medulla oblongata
5.	A patient grumbles about violation of swallowing, speech, weakness of right extremities. Objectively: dysarthria, dysphonia, pharyngeal reflex absents, is phonation of soft palate, violation motions in trapezium and stennocleidomastoid muscle to the left, central paresis of right extremities. Name a syndrome. What does he arise up?	Syndrome of Shmidt's. Defeat of counter-clockwise half of medulla oblongata.

4. Materials of the methodical providing of self-preparation of students

The card of independent work is oriented with literature.

Basic tasks	Pointing
To learn	
Anatomy IX, X, XI, XII pair of cranial nerves.	To draw layout of nucleus charts and motion of fibres IX, X, XI, XII pair of cranial nerves.
Symptoms of defeat IX, X, XI, XII pair of cranial nerves.	Write in copybook signs defeats.
Alternate syndromes of medulla oblongata.	To enter in the notebook of signs defeats
Signs of bulbar and pseudobulbar syndromes.	To make the table of differential diagnostics of bulbar and pseudobulbar syndromes.

Theme: «Pathology of the vegetative nervous system»

I. Actuality of theme

Origin of concepts «vegetative» and «animal» is related to the pictures of presence in the organism of vegetable (vegetative) and animal (animal) functions. The functions of feed, breathing, selection, reproduction and circulation of liquids behave to vegetative. The animal are arbitrary muscular reductions and functions of the special sense-organs is sight, ear, sense of smell, taste and touch.

II. Educational aims

A student must **know:**

- functions of the vegetative system;
- classification of the vegetative nervous system;
- disorders of suprasegmentar and segmentar department of the nervous system;
- functional methods of research of the vegetative nervous system.
- treatment of vegetative disorders.

(α-II)

A student must skills:

- clinic-neurology examination of patients with vegetative disorders;
- analyse results of clinical and functional methods of research;
- to appoint treatment to the patients with vegetative disorders

(α -III)

III. Interdisciplinary integration

Disciplines	To know	Able
1. Previous disciplines		
Anatomy	Anatomy of the vegetative nervous system.	Schema of vegetative suprasegmentar and segmentar departments.
Physiology	Functions of the vegetative nervous system;	To investigate the functions of the vegetative nervous system.
Biochemistry	Basic neurotransmitters.	To explain influence of neurotransmitters on vegetative disorders.
Pharmacology	Mechanisms of action of vegetotropic preparations.	To conduct pharmacological vegetative diagnostic tests.
Propaedeutic of general medicine	Methods of inspection of different internalss	To conduct the фізікальне inspection of internal organs and system.

Next disciplines (that provided)		
Cardiology	Mechanism of the vegetative regulation of heart.	To find out vegetative heart-vascular.
Surgery	Mechanism of the vegetative regulation of vessels.	To discover vegetative trophic disorders in extremities.
Endocrinology	Hypothalomo-hypophysis regulation glaud's.	To discover neuroendocrine vegetative syndromes.
Eye illnesses	Vegetative innervation eye.	To find out the vegetative syndromes of eye
Intra object integration		
Cerebrovascular disease	permanent and paroxysmal displays of segmental vegetative system.	To differentiate vegetative syndromes with acute violations of cerebral circulation of blood.
Epilepsy	clinical signs of temporal epileptic attacks.	To differentiate epileptic attacks with vegetative and syncopal state.
Headache	Syndromes of vegetative vascular headache.	To conduct the differentiated estimation between the different types of headache.
Neuroses	Signs of vegetative violations are at neuroses	To differentiate vegetative syndromes with the organic defeats of vegetative system.

IV. Plan and organizational structure of employment:

№	Basic stages of employment, their function and maintenance	Educational aims are in the levels of mastering	Methods of control and studies	Materials of the methodical providing	Time of min.
	1. Preparatory stage				
1 2	Organization of employment Raising of educational aims and motivation			Academic of magazine. See the „Educational aims” „Actual of theme”	1 1
3.	Control of initial level of knowledges, skills, abilities. -departments of vegetative nervous system; - classification of vegetative disorders; - anatomic structures which enter in the complement of different departments of vegetative nervous system; - clinical displays of vegetative disorders; - methods of diagnostics of vegetative pathology; - treatment of different forms of vegetative disorders	I II II	Individual verbal questioning, test control of the II level, decision of typical tasks of the II level.	Tables, pictures, plaster casts, questions, tests of the II level, and typical tasks of the II level.	10
	II. Basic stage				
1.	Forming of professional skills and abilities: -practical skills:	III	The practical training is in working off skills; the	Patients. A professional algorithm is for the capture of skills	

	examination of vegetative nervous system; -to diagnosis vegetative disorders on the basis of collection of anamnesis, complaints, neurology examination Skills: -what plan of inspection sick is with the defeat of vegetative nervous system. -to conduct differential diagnostics of vegetative disorders with other neurological syndromes. -to define adequate treatment to the patient with vegetative disfunction.	III	professional training is in the decision of offtype clinical situations.	and abilities.	25
III Final stage					
1. 2. 3.	Control and correction of level of professional abilities and skills Totals of employment Home task	III	Individual control of practical skills and their results. Analysis and estimation of clinical job performances Test control (III) Decision of offtype tasks (III)	Neurological hammer, hospital of patients charts, Results of clinical inspection . Offtype tasks (III) are the Test tasks (III?) A reference schema is for independent work with literature	10 2 1

V. Materials of the methodical providing of employment

5.1. Materials are for the individual verbal questioning: (level II)

- What the vegetative nervous system?
- What departments of the vegetative nervous system do select?
- Basic functions of vegetative nervous system depending on a department?
- Basic pathological syndromes: defeat of segmentar department of vegetative nervous system.
- Instrumental and functional methods of inspection of patients are with pathology of the vegetative nervous system.
- Principles of treatment of vegetative disorders.

5.2. Materials of control for the preparatory stage of employment.

Materials are for test control

1. Sick grumbles about the attacks of headache in the left half of chairman, dizziness, unclearness of objects in right eyeshot. Pain increases at a cough, motions. Preceded an attack «fog» before eyes. It is ill from 20. Attacks 1 one time per a month. It is not discovered in neurological status of pathology. Information UZDG: pathology of vessels absent, violation of venous outflow.

What most reliable diagnosis?

*A. Migraine, ophthalmoplegic form.
B. Temporal periarteriitis.
C. Headache of tension.
D. Cluster headache.
E. Syndrome of Tolos-Khant's.

2. The sick 28 years grumbles about the attacks of headache which arises up 1-2 times on a month. Pain is localized in the right half of chairman, accompanied by nausea, sometimes vomit. Before an attack the decline of background of mood is marked. The attack after sleep regreses. In neurological status: of focal sings absent.

What most reliable diagnosis?

*A. Migraine, classic form.
B. Brain-growth.
C. Cluster headache.
D. Tension headache.
E. Cervicocranialgia.

3. At sick complains pain of right half of chairman. Pain increases from of light, lond sounds. In neurological status: of focal sings absent. From anamnesis it is known that attacks arise up during 5, 1 time on 2-3 months.

Appoint treatment:

*A. Diergotamini, nomigreni, antidepressants.
B. Diergotamini, phinlepsin, spasmalgoni.
C. Cavintoni, lasix, phinlepsin.

D. Valerians, cavintoni, ergotamine.
E. Detralex, lasix, trentali.

4. The sick 35 years grumbles about pain in the fingers of brushes, pallor of skin of fingers during a pain attack. It is ill near 5. There was the set diagnosis – illness of Raynaud's.

Appoint treatment:

* A. Niphedipini, indomethacin.
B. Indomethacini, fhinlepsin, diasolini.
C. Cavintoni, antibiotics, мілдронат.
D. Pyracetamum, indomethacin, mildranati.
E. Cavintoni, analgini, adaptole.

5. A young man complaints about the attacks of acute pale of skin, with tachycardia, increase of arterial pressure, internal chill, feeling of lack of air, fear of death. At the end of attack is poliuria.

Name an attack:

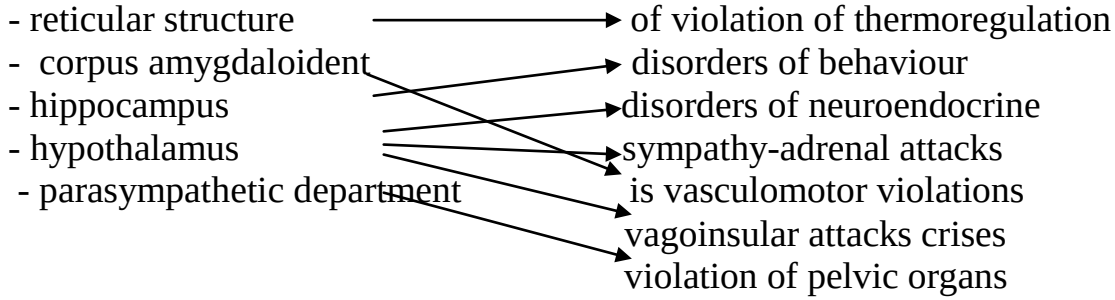
* A. Sympathoadrenal paroxysm.
B. Vagoinsylar paroxysm.
C. Stroke.
D. Nervous breakdown.
E. Hysterical attacks.

Materials are for test control (level II)

1. To syprasegmentar department has:

a) hypothalamus
b) limbic system
c) reticular structure
d) cerebellum
e) substance nigra
f) corpus amygdaloident
Answer: a, b, c, f

2. To make correlation: at pathology of what educations there are next violations

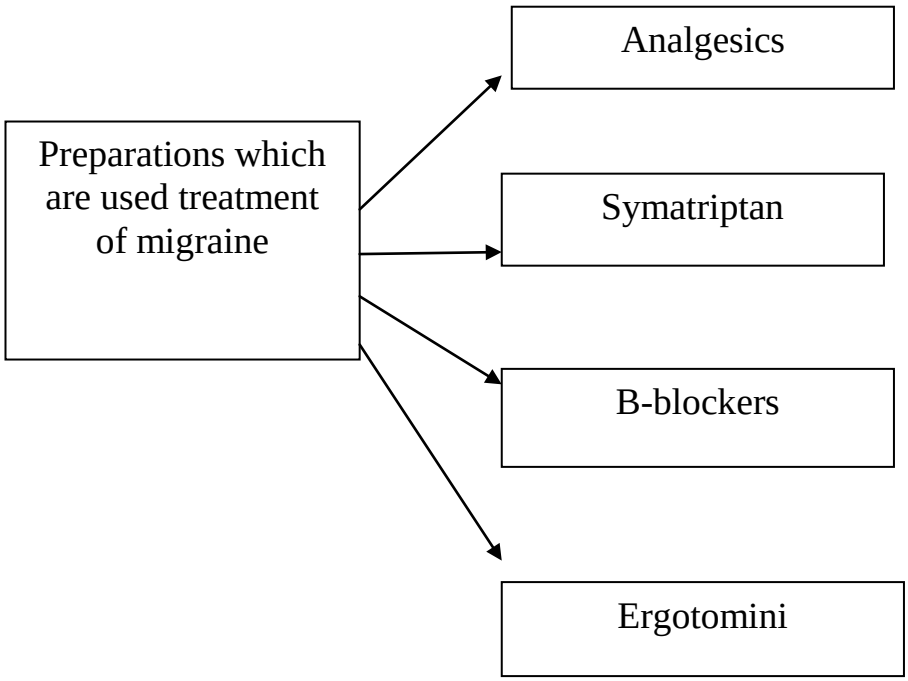


3. In what sequence does conduct the inspection of patients with pathology of vegetative nervous system?

a) clinical tests;

b) functional researches;
c) acquisition of anamnesis;
d) arterial oressure, pulse;
e) habitus.
Answer: c, e, d, a, b

4. Preparations which are used treatment of migraine



Typical tasks (level II):

1. A young woman from periodically 3-7 times on a year have attacks of pulsating pain in a right half of head which proceed 7-10 hours are accompanied by nausea, photo- and by a phonophobia. The attack after sleep absent.

To set: Clinical diagnosis. Tactic of conduct. Treatment.

(A migraine is with an aura)

2. A young man grumbles about the attacks of burning, cutting character of head pain in the left half of head, in the area of orbit of eye. Attacks proceed 20-40 min and repeat oneself a few times on days, more frequent in the morning. The similar states are marked 1-2 times on a year. During an attack patint has: conjunctival injection, lacrimation, rhinorrhea, Horner's syndrome.

To set: Clinical diagnosis. Tactic of conduct. Treatment.

(Cluster headache)

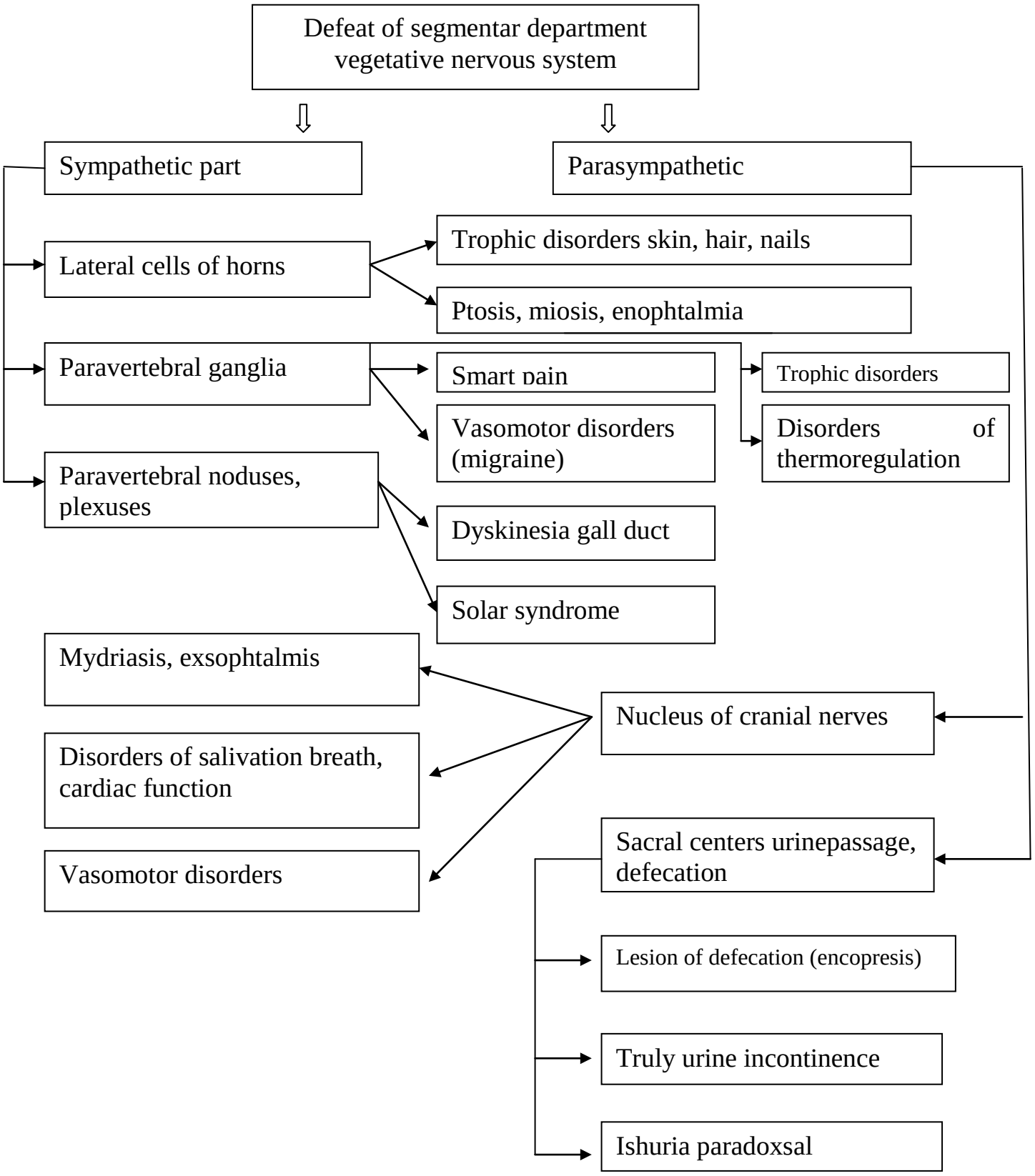
3. A young woman after supercooling has feeling of paresthesias, pain in the fingers of brushes and feet. Objective: fingers are pale, fillings out. It is ill near 10 year.

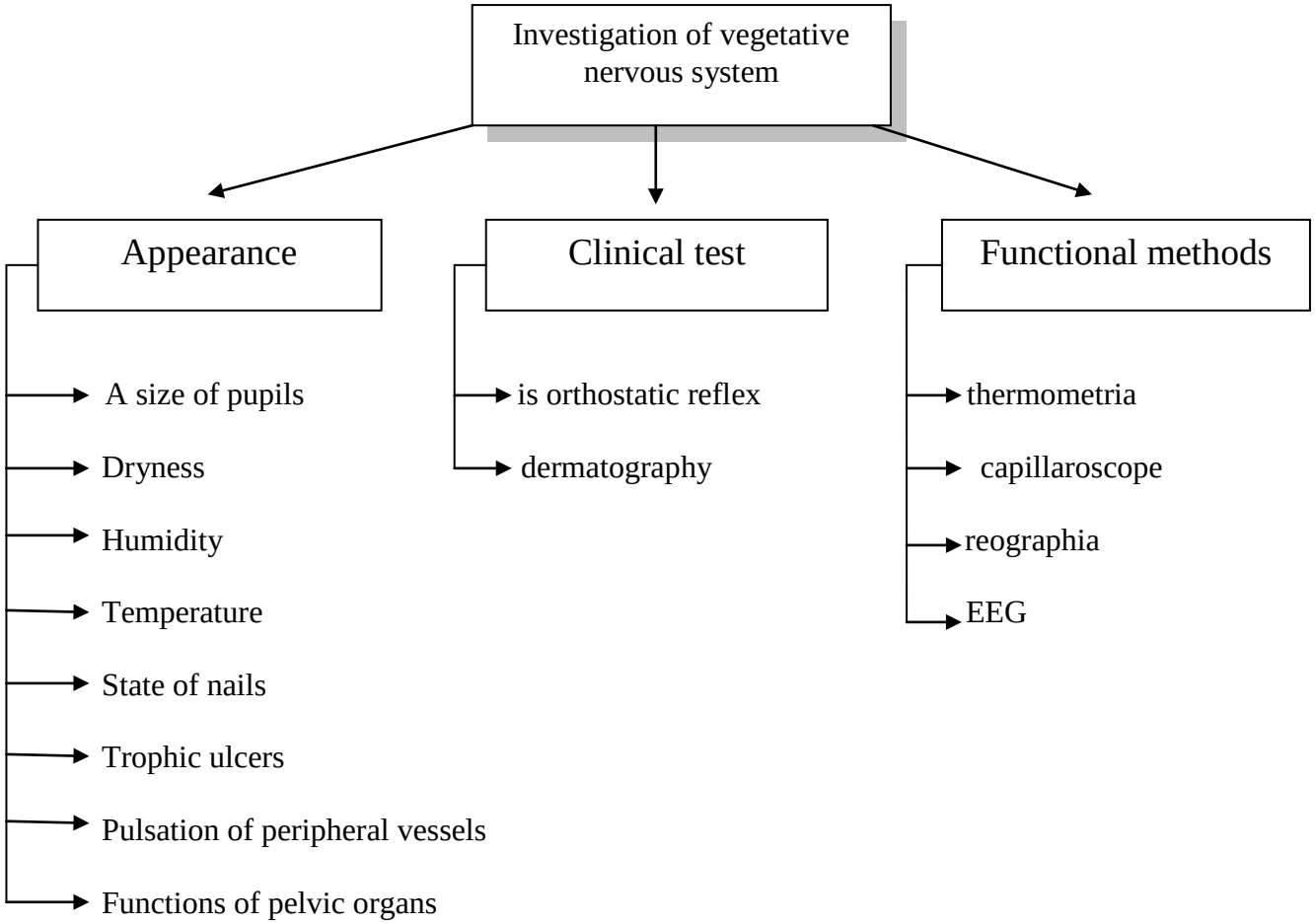
To set: Clinical diagnosis. Tactic of conduct. Treatment.

(Syndrome of Raynaud's)

5.3 Materials of the methodical providing are for the basic stage of employment

№	Task	Sequence of implementation	A remark, warning, is in relation to self-control
1.	An inspection of patients is with the defeats of vegetative nervous system.	The execute in such sequence: 1. Acqusition are anamnesis and complaints. 2. Habitus of patient 3. Define uniform of pupils (midriasis, miosis). 4. Define dermographism. 5. Measure a pulse on both extremities and to define a pulsation on symmetric areas 6. Measure of arterial pressure and define his symmetry 7. Define respiratory rate, heart rate. 8. Examination: clinical reflexes 9. The define appoint the additional methods of research 10. The appoint of differentiated treatment to the patient.	- Habitus dryness and humidity of skin, state of nails, presence of trophic ulcers. -From clinical reflexes of define orthostatic - Capillaroscope, EEG, reographia


Defeat of segmentar department vegetative nervous system
Sympathetic part
Parasympathetic
Lateral cells of horns
Trophic disorders skin, hair, nails
Ptosis, miosis, enophtalmia
Paravertebral ganglia
Smart pain
Vasomotor disorders (migraine)
Trophic disorders
Disorders of thermoregulation
Paravertebral noduses, plexuses
Dyskinesia gall duct
Solar syndrome
Mydriasis, exsophtalmis
Disorders of salivation breath, cardiac function
Vasomotor disorders
Nucleus of cranial nerves
Sacral centers urinepassage, defecation
Lesion of defecation (encopresis)
Truly urine incontinence
Ishuria paradoxsal



Influence of likable and парасимпатичних nerves is on the function of organs

Organ	Nervous system	
	Sympathetic	parasympathetic
Pupil	Papillary mydriasis	Narrows
Glands (except for sweat)	Weakens a secretion	Increase a secretion
Sweat-glands	Increase a secretion	Absent (not innervation)
Heart	Tachycardia	Bradicardia
Smooth musculature of internalss	Relaxed	Contraction
Vessels (except for coronal)	Contraction	Not innervation
Coronal vessels	Dilatation	Contraction
Sfinkteri	Elevate tone	Relaxed

5.4. Materials of control for the final stage of employment.

Offtype tasks (level III)

1. The a man, which suffers alcoholism there was an acute pain in an epigastralarea, which increases in position, upright. Pain present after stress. Pain is sharp, burning, from irradiation lambar part, on all stomach. A patient is excited, cries. At a review: tachycardia, flatulence. Similar attacks arise up often, but it is not discovered at the inspection of somatic and surgical pathology. Between attacks marks constipations, parahypnosiss, crabbiness.

To set: Clinical diagnosis. Tactic of conduct. Treatment.

(Solyarit)

2. The a woman has migraine after attacs present focal syndromes: motor aphasia, hemiparesis.

To set: Clinical diagnosis. Tactic of conduct. Treatment.

(Migrane)

3. The young man after of the flywithin a week has every morning a temperature to the lesion of termoregylation. A feel here does not change. In neurological statue: focal signs absent. Somatic pathology it is not discovered, indexes of blood in a norm. After the reception of aspirin a temperature does not go down.

To set: Clinical diagnosis. Tactic of conduct. Treatment.

(A hypothalamic syndrome violation of termoregylation is after fly)

Tests (level III)

What symptoms are observed at the defeat of next educations?

Syndrome level of defeat	Violation of termoregylation	Neuroendocrine disorders	Vasomotor violations	Violation of behaviour	Sleeping disorders and vigilance
Hypothalamus	+	+	+		
Hippocampus				+	
Reticular formation	+				+
Corpus amygdaloidem			+		

5.4. ***Materials of the methodical providing of self-preparation of students***

The card of independent work is oriented with literature.

№	Educational task	Pointing is to the task
1.	To learn classification of vegetative disorders	Name the departments of VNS, what anatomic structures are included in the different levels of VNS.
2.	What syndromes at the defeat of different vegetative structures?	To define basic syndromes disorders of VNS.
3.	Algorithm of inspection of patients with pathology of VNS	Inspection of patients is with vegetative disorders.
4.	Differential diagnostics of diseases of VNS	What additional methods of research of VMS
5.	Principles of treatment of patients are with vegetative disorders	General principles of treatment

Theme: «Localization of functions is in a cortex. Syndromes of defeats. Neurolymph, its changes. Meningeal syndrome»

I. Actuality of theme

A cerebrum is mass of interdependent nervous mews which form overhead part of central nervous system for a man. Cora of large brain covers two hemispheres of cerebrum: right and left. The hemispheres of cerebrum for the grown man are most strongly developed, the greatest and functionally the most essential part of central nervous system. The departments of hemispheres cover by itself all other parts of cerebrum. Right and left hemispheres are dissociated from each other by the deep longitudinal crack of large brain, which arrives at the large joint of brain, or mesolobus.

II. Whole lessons:

A student must **know:**

- structure of hemispheres of brain;
- localization of functions in a cortex, membrane of brain;
- motor and sensory functional areas of cerebral cortex;
- praxis, gnosis, speech – syndrome of defeat;
- syndromes of defeat of lobes of brain:
  - frontal lobe;
  - temporal lobe;
  - parietal lobe;
  - cervical lobe;
- cerebrospinal fluid (CSF): normal and pathology

Practical skills:

- examination of patients with pathology of cortex;
- techniques of lumbar puncture;
- examination of praxis, gnosis, speech;
- examination of meningeal symptoms

A student must **be able:**

- neurology examination of patients with the defeat of cortex;
- analisis results of lumbar puncture (CSF);
- to determine the types of apraxia;
- to determine the type of gnostic functions.
- to define the type of disorder of speech

III. Educator aims

Mastering of priority of prominent scientists students in the study of physiology and cytoarchitectonics of cortex. Education of modern clinical thought. Forming for the students of the philosophical understanding of activity of higher cerebral functions in normal terms and at pathology.

IV. Interdisciplinary integration

Discipline	To know	Able
Previous disciplines		
Anatomy	Anatomy of cortex. Anatomy of shells of cerebral and spinal brain	Schematic to represent lobe, sulcus and gurus To investigate higher cortical functions
Physiology	Higher cerebral functions. Cerebrospinal fluid.	To formulate the basic functions of bark. To estimate the results of CSF
Next disciplines (that provided)		
Psychiatry	Psychical disorders are at disorders of different departments of cortex.	
Infectious diseases	Meningeal symptoms, indexes of CSF in a normal and at pathology, cellulas-protin dissociation, protein-cellular dissociation, hemorragic syndrome	To make the algorithm of conduct lumbar puncture. Analysis the resultat of CSF
Intra object integration		
Vascular disiase of the nervous system	Syndromes of irritation of different departments of cortex. Syndromes of fall.	To differentiate the defeat of different departments of cortex

VI. Plan and organizational structure of employment

	Basic stages of employment, their function and maintenance	Educational aims are in the	Methods of control and studies	Materials of the methodical providing	Time
I. Preparatory the stage					
1.	Organization of employment			Academic of magazine. See the „Educational aims” „Actual of theme”	1
2.	Raising of educational aims and motivation				

3	Control of initial level of knowledges: - functions of different departments of cortex; - syndromes of fall and irritation of cortex; -Jackson's epilepsy; -methods diagnostics of higher function of cortex; - primary, second, tertiary fields, theory of Pavlov's, theory of subdominant of hemispheres of cerebrum	II	Individual questioning; test control of the II level; decision of typical tasks of the II level	Tables, pictures, plaster casts, questions for the verbal questioning, tests of the II level, typical tasks of the II level	10
II. Basic stage					
4	Forming of professional skills and abilities: - to lay hands on the method of clinical inspection patients with disorders of higher cortex functions; - to diagnose apraxia, agnosia and aphasia on the basis of collection of anamnesis, complaints, neurology examination; - to conduct examination of patient the defeats of different departments of cortex - by the method of conduct of lumbar puncture Able: - to define the plan of examination sick with the defeat of cortex; - to define localization of defeat;	III III	The practical training is in working off skills; the professional training is in the decision of offtype clinical situations.	Algorithms for forming of practical skills, methodical developments. Neurological hammers. Tables. Patients. Patients, hospital cause. A professional algorithm is for a capture skills and ability of examination of patients.	22

	- to conduct differential diagnostics of different types of changes of CSF				
III. Final stage					
5.	Control and correction of level of professional skills and abilities.	III	Individual control of practical skills, estimation of clinical job performances. Decision of offtype situational tasks of the III level.	Patients. Offtype situational tasks of the III level.	10
6.	Working out the totals of practical employment.			The oriented map is works are with literature	1
7.	Home task				1

VII. Materials of the methodical providing of employment:

1. Materials are for the individual verbal questioning

1. Structure of large hemispheres of cerebrum?
2. Is there localization of functions in a cortex?
3. Is there a concept about functional asymmetry of hemispheres?
4. Functions of gnosticism, types of violation of functions of gnosticism: visile, olfactory, taste, auditory to агнозії, астерегноз, аутотопагнозія, анозогнозія?
5. Praksis, types of апраксій: structural, ідеаторна, agile?
6. Language, his disorders: agile, sensory, letheral to the aphasia.
7. Syndromes of defeat of separate parts of large hemispheres.
8. Syndromes of defeat of right and left hemispheres.
9. Syndrome of death of cerebrum, syndrome of the «washed» off patient.
10. Spinal пункція.
11. Shells of spinal and main cord.
12. Meningeal'ni symptoms.

Materials are for test control (II):

1. To make correlation: at pathology of what department’s cortex is observed next violations

- frontal fate — agile aphasia

- temporal	visual agnosia
- parietal	sensory aphasia
- back of head	autotopagnosia
	astasia, abasia

Theme: „The final module 1 - General neurology.”

I. Actuality of theme

The lesson controlled by and consolidated knowledge, which were awarded to students in the process of self extracurricular work, studying the history of neurology, the stages of the evolution of the nervous system, the main principles of its structure and functioning. This work summarizes the study of the most important themes of the course of neurology, namely the sensitivity functions, provision of voluntary movement, symptomatic and coordination systems. Determining the status of these functions is extremely important for the evaluation of the activity of the nervous system as a whole. Violation of these functions is found in the case of various diseases of the nervous system cardiovascular, inflammatory, demyelinating, and traumatic, inheritance and the like. To be able to detect syndromes motor, sensitive, extrapiramidale and coordination disorders should a doctor of any profession to ensure the correct diagnostic medical tactics.

Occupation sums up in the study of the important sections of neurology, namely pathology of the cranial nerves, the vegetative and cerebrospinal fluid systems, higher brain functions. The lesson also controlled by and consolidated knowledge, obtained by the students in the process of self extracurricular work of the study of the concepts of localization of function in the brain cortex, and their mastery of the modern additional methods of examination of neurological patients.

II. Educational aims

A student must **know:**

- The history of neurology, the stages of the evolution of the nervous system, the basic principles of its construction and operation of (a=2).
- Structure of the sensing of the analyzer, motor, extrapyramidal and coordination systems (a=2).
- The functions of the sensitive, motor, extrapyramidal systems and the cerebellum (a=2).
- The main clinical syndromes violations of the functions of sensitive, motor, extrapyramidal systems and the cerebellum (a=2).
- The structure, the functions of the sensory and motor systems of all the twelve pairs of cranial nerves, clinical syndromes their destruction (a=2).
- The anatomical structure of cortex, work V.O.Betsa, the study of history and the modern concept of localization of function in the brain cortex, intrahemisphere relations, the functional asymmetry of the hemispheres (a=2).
- Clinical symptoms of violations of the higher brain functions and syndromes defeat of the different parts and the hemispheres of the brain (a=2).
- The structure, function, and clinical syndromes destruction of segmentary and syprasegmentar divisions of the autonomic nervous system (a=2).

- Research methods and the characterisation of the cerebrospinal fluid in norm and of pathology (a=2).
- Signs meningeal syndromes (a=2).

A student must **be able:**

- Investigations of the central and peripheral nervous system (a=2).
- Investigations the function of sensitive, extrapyramidal and coordination systems (a=3).
- Find syndromes sensitive, extrapyramidal and coordination of violations (a=3).
- The topical diagnosis of disorders of the nervous system (namely, sensitive, motor, extrapyramidal and coordination systems (a=3).
- Investigations the function of 12 pairs of cranial nerves and discover syndromes violations of their functions (a=3).
- Investigations of the upper brain function to detect the symptoms of their disorders and syndromes defeat of the different parts and the hemispheres of the brain (a=3).
- Investigations the functions of segmentar and syprasegmentar divisions of the autonomic nervous system, to detect the clinical syndromes of their defeat (a=3).
- Examination of meningeal syndromes of cerebrospinal fluid in norm and of pathology (a=3).
- On the material of the clinical examination of patients compile data and set the topical diagnosis of disorders of the nervous system (a=3).
- Appoint an individual scheme of examination neurological patients with the use of additional non-invasive research.
- Make the genealogy of the patient and the use of other medico-genetic methods for the diagnosis of hereditary diseases (a=3).

III. Plan and organization of structure of employments.

№	Basic stages of employment, their functions and maintenance	Educational aims are in the levels of mastering	Methods of control and studies	Materials of the methodical providing	Time (хв.)
I. Preparatory stage					
1. 2.	Organization of employment. Determination of educational aims and motivation.	II		Academic of magazine.	1 2
II. Basic stage					
3	Inspection and reinforcement of the previously acquired professional skills and abilities: - study of the functions sensitive, motor, extrapiramidal and	III	The practical training is in working off skills; the professional training is in	The patients. Professional algorithms for the study of the functions of sensitive,	20

	coordination systems; - definition of syndromes, sensory motor, extrapiramidal and coordination of violations - renewal of topical diagnosis the study of the functions and definition of the syndrome of cranial nerves; - study of higher cerebral functions, diagnostics of the syndromes of defeat cortex of cerebrum; - study of the functions and determination of syndromes of segmental and syprasegmental levels of vegetative nervous system; - exposure of meningeal syndroms; - analysis of cerebrospinal fluid; - analysis of the results of electrophysiological, ultrasonic, x-ray, medical-genetic methods of examination of patients and methods of neuro imaging.		the decision of offtype clinical situations	motor, extrapyramidal and coordination systems, to determination the clinical syndromes. Professional algorithms for the examination of cranial nerves and the extrapyramidal nervous system, the higher brain functions. Approximate map to determine the clinical syndromes.	
III. Final stage					
4.	Control and correction of professional abilities and skills generalization of fining of clinical inspection of patients and ground of topic diagnosis.	III	Individual control of practical skills, estimation of clinical job performances. Decision of offtype tasks of the III level.	Patients. Offtype situational tasks of the III level.	40
7.	Working out the totals of practical employment.				5
8.	Home task			Oriented map for independent work with literature	2

VII. Materials of the methodical providing of employment.

1. Materials of control for the preparatory stage of employment

A question is for the verbal questioning.

Stages in the evolution of the nervous system, principles of its structure

- The stages of the development of the nervous system.
- Anatomic and topographic departments of the nervous system.
- What are the basic principles functioning of the nervous system?

Sensitive system and symptoms of its defeat

- How many neurons are analyzers total sensitivity?
- What the general sings ofpathways of explorers of superficial and deep sensetivenes?
- What the kinds of sensitive disorders?
- What types of sensitive violations emit?
- With a defeat, any entities violated the sensitivity of peripheral type?
- What sensitive disorders occur provided the defeat of the rear horns?
- Reflex motor function and its complications?
- How many neurons in the system of voluntary movement?
- Where are located the cortical neurons and muscle path?
- Give the definition of the terms '"paresis" and "paralysis".
- What do you know paresis and paralysis?
- What are the signs of the central paralysis?
- What are the signs of peripheral paralysis?
- Describe the syndrome defeat precentral gyrus.
- Describe the syndrome Brown-Sequard.
- For the destruction of any localization characteristic fibrilation twitching?

Extrapyramidal system and syndromes of its defeat

- What educations and how many levels is extrapyramidal system?
- What are functions of symptomatic of the extrapyramidal system?
- Describe the major clinical manifestations of Parkinson's syndrome.
- Name the types of гиперкинезов. Provided destruction, no structures they arise?

The structure, functions and diseases of the cerebellum and coordination system

- What ways do pass through the lower, middle and upper pedunculus of cerebellum?
- What the function of a cerebellum?
- What do disorders arise up of defeat of the wermix cerebellum?
- What do disorders arise up of defeat of the cerebellar hemispheres?
- What does kinds of ataxia?

The cranial nerves and their pathology

- Where are the subcortical centers of smell and sight?
- What is hemianopsia?
- Type of hemianopsia.
- Syndrome defeat of optic tract and radiation, distinction?
- Where do nucleus of III, IV, V, VII, VIII, IX, X, XI, XII pair of cranial nerves situation?
- Describe the function of these nerves.

- Describe the syndrome defeat of nerves oculomotor, trochlear, abducens.
- Decribe the syndrome Argyll-Robertson.
- Decribe the syndrome Foster-Kennedys's.
- Decribe the syndrome Horneres, Pti.
- Decribe the syndrome defeat of trigeminal nerve.
- Decribe the syndrome defeat of knot of trigeminal nerve.
- Syndrome defeat of facial nerve.
- Decribe the central and peripheral paresis of facial nerve.
- Describe the ponto-cerebellum angle syndrome.
- Whan is bulbar and pseudobulbar synrome disrinction?
- Decribe alternate syndrome of medula oblongata: Jackson's, Avellis's, Schmidt's, Valenberg-Zakcharchenko.
- Decribe alternate syndrome of midbrain: Benedikt's, Weber's, Klodt's.
- Describe alternste syndrome of pontine: Millard-Gubler's, Foville's.
- Brain cortex, lesion of the lobes.

Localization of function in the brain cortex and symptoms of violations

- Where localization primary filds of brain cortex?
- What is agnosia, apracsia, aphasia?
- Describe syndromes defeat of the frontal, temporal, occipital, parietal part.
- Describe the syndromes of defeat of right and left hemisphere of cerebrum.

The vegetative nervous system and its pathology

- What structures are syprasegmentar level of the vegetative nervous system?
- What functions are executed by the syprasegmentar level of the vegetative nervous system?
- Where are located segmentar parasympathetic centres?
- Where are located segmental sympathetic centres?
- Describe the syndrome Horner's. What is defeat?
- What types of are lesion of pelvic organs?
- Describe the main sings of hypothalamic syndrome.

Meningeal and cerebrospinaL fluid

- What is produced and where the will of cerebrospinal fluid?
- Describe the way the circulation of cerebrospinal fluid.
- What is protein-cellular dissociation? When is it?
- Describe the clinic meningeal syndrome.
- Describe the clinic hypertension syndrome.
- What changes the X-ray picture of the skull is observed in the case of hypertension syndrome?
- What classification hydrocephalia?

Additional methods of research in the clinic of nervous diseases

- For what purpose appoint EMG?
- For what purpose appoint EEG?
- What rhythms are registered on the EEG in the norm?
- What changes in the EEG do appear in the case of epilepsy?
- What changes in the EEG do appear presences of brain tumors?

- With what purpose use of ultrasound, telecine?

Test and typical tasks of level II

Tests and typical tasks of tier II are presented in the “Collection of test questions and tasks of nervous diseases for higher medical institutions" in sections "Reflex motor system", "Sensitivity", "Extrapyramidal system. Cerebellum", "The cranial nerves and their pathology", "Localization of function in the brain cortex and symptoms of violations", "The vegetative nervous system and its pathology", "Cerebrospinal fluid and meningeal and hypertension”

2. The materials of the methodical providing of the basic stage of employment

Professional algorithms for the formation of skills and abilities for the inspection of sensitive, reflex motor, extrapyramidal and coordination functions in patients with see in methodical instructions to practical employments.

Professional algorithm for determination of the clinical syndromes

№	Task	Poiting	Notes
1	To investigate sensetivity	1) to investigate all types of sensitivity; 2) to detevine, what types of sensitivity violated; 3) which is observed type of sensitive disorders	
2	To investigate motor function	1) to examination up the volume of active motions and force of muscle; 2) to draw a conclusion about the presence of paresis and paralysis; 3) to examination of muscles tone and trophic; 4) to investigate the physiological and the presence of pathological reflexes; 5) to defione character of paresis and paralysis.	
3	To investigate the functions of extrapyramidal system	1) to investigate mimic, speech, timbre of voice; 2) to examination up tone of muscle, presence of symptome Noyk-Gavena, to define a pose, character of gait, rate of implementation of motion; 3) to investigate the presence of physiology synkinesiss, tremor, huperkinesias to define a presence hyperkinetic-hypotonic and hypertoic-hypokinetic syndroms	
4	To investigate coordination function	1) to investigate coordination of motion finger-noce, heel-to-knee tests, adiadochokinesis, dysmetria and over; 2) to investigate the function of equilibrium (for	

		Romberg's, gait); 3) to investigate up tone of muscles; 4) to define the presente of ataxia and his kind	
5	The topical diagnosis	To set, what structure is staggered?	

Professional algorithms for the capture of inspection of functionf of cranial nerves, higher crust function; vegetative nervous system methods, meningeal and hypertension syndromes look in the methodical poiting to practical employments.

A reference map is for determination of clinical syndromes

1. To investigate the functions of cranial nerves.
2. Determine which features are violated and, what clinical syndromes.
3. To investigate the higher cortex functions.
4. Determine what symptoms and syndromes cortex, or a hemisphere violation is the patient.
5. Explore the function of the vegetative nervous system.
6. Determine detected vegetative symptoms and syndromes.
7. Examination meningeal symptoms.
8. Explore reflex motor, sensory functions, coordination of movements, and the functions of symptomatic of the system.
9. To summarize the data, and use the results of additional methods of examination of patients and install the topical diagnosis.

3. Control materials for the final stage of employment

Offtype tasks of the III level

№	Offtype tasks of the III level	Standard of answer
1.	Patient has diagnosis: Syrengomyelia. Neurology status: lesion of pain and temperature sensation on the type "half jaket", "jaket" on left, atrophy and hypertonia of left ams. What type's sensation of defeat? What are the names of motor disorders? Topic diagnosis.	Segmental dissociated peripheral paresis of the left hand. Dorsal and frontal horns, level C5-T1
2.	The patient in the morning is headache, which is accompanied by nausea and vomiting. A syndrome should be excluded? What additional research is necessary to appoint?	Hypertension syndrome. Skull X-rays, the examination of eye fundus, CT or MRI of the brain.
3.	Patient has: tumor of spinal cord. MRI: focus localisation of half of cervical bulge right. What lession of motor and sensory from patient. Name syndrome.	Peripheral paresis of right upper and central of lower limb lesion of deep sensory at right, left syperfasial, type-conductive. Syndrome of Brown-Sequard, Horner's syndrome.

4.	Patient has stroke, clinical signs: peripheral paresis of facial muscles on the sade of lesion hemiplegia on opposite side. Name syndrome.	Brain steam. Syndrome Millard-Gubler's.

Materials of the methodical providing of self-preparation of students to the modul №1 "General neurology"

Basic tasks	Pointing
To repeat: - history of development of neurology, stages of evolution of the nervous system, basic principles of its structure and functioning; - structure of sensible analyzer, reflex-motive, extrapyramidal and co-ordinating systems; - functions sensible, reflex-motive, extrapyramidal systems and cerebellum; - main clinical syndromes of violation of functions sensible, reflexly motive, extrapyramidal systems and cerebellum; - methods of research of functions of sensitiveness, autokinesias, extrapyramidal and coordinating systems.	For **self-preparation** students can use materials of the methodical pointing to practical employments on the proper themes: "Sensible system and symptoms of it defeat. Kinds and types violation of sensitiveness", "Syndrome of violation of sensitiveness", "Unconditioned reflexes and their pathology", "Pyramid system. Central and peripheral paralyses", "Syndromes of defeat motive way on different levels", " Extrapyramidal system and syndromes of its defeat", "Cerebellum. Syndromes of defeat of cerebellum". The stages of evolution of the nervous system are basic principles of its structure and functioning"
- structure sensible and motive systems of twelve pair of cranial nerves; - functions which are executed by each of twelve pair cranial nerves; - methods of research of functions of twelve pair of cranial nerves; - clinical syndromes of defeat of cranial nerves; - anatomic structure of cortex; - history of study of localization of functions in a cortex; - clinical symptoms of violations of higher cerebral functions; - syndromes of defeat of different parts and hemispheres of cerebrum; - methods of research of higher cerebral functions; - structure and functions of segmentar and syprasegmentar departments of the vegetative nervous system; - methods of research of functions of segmentar and syprasegmentar departments of	Materials of the methodical pointing to practical employments on the proper themes: "Pathology of olfactory and visual analyzers", "Syndromes of defeat of oculomotoriuss. Innervation of look and its pathology", "Trigimenal, facial and vestibule-coxlearis nerves and symptoms of their defeat", "Pathology IX, X, XI, XII steam of cranial nerves. Bulbar and pseudobulbar syndromes", "Localization of functions, are in a cortex. Syndromes of defeat", "Pathology of the vegetative nervous system. Neurogenic acraturesiss", "Neurolymph, its changes. Meningeal and hypertension syndromes. Hydrocraniums"

the vegetative nervous system; - clinical syndromes of defeat of segmentar and syprasegmentar departments of the vegetative nervous system; - structure of the liquar system, ways of circulation of liquar; - methods research of cerebrospinal fluid, indexes of liquar in a normal and pathology) - signs meningeal and hypertension syndromes; - general descriptions, methods: CT, MRI, EEG, EMG,X-ray of skull, spinal cord, transcranial-intracranial. Doppler ultrasound angiography and genetic methods.	

RECOMMENDED LITERATURE

Basic

1. Neurology : textbook for students / L. Sokolova [et al.] ; ed. by.: L. Sokolova. - Vinnytsya : Nova Knyha Publishers, 2012. - 280 p.
2. Kolenko O. I. Neurology: General Neurology : educational book / O. I. Kolenko. - Sumy : Sumy State University Publ., 2010. - 169 p.
3. Rohkamm, Reinhard. Color atlas of neurology / R. Rohkamm. - New York ; Stuttgart : Thieme, 2004. - 440 p.
4. Waclawik A. Neurology Pearls / A.J. Waclawik, T.P. Sutula. - Philadelphia : Hanley @ Belfus, 2000. - 228 p.
5. Campbell, W. W. Dejong's. The Neurologic Examination / William W. Campbell. - India : Lippincott Williams & Wilkins, 2013. - 818 p.

Additional

1. Adams V. M. Principles of neurology / M. Victor, A. H. Ropper. - 7th ed. - New York : McGraw-Hill, 2000. - 1692 p.
2. Afifi A K. Functional Neuroanatomy / A. K. Afifi, R. A. Bergman. - New York: McGraw-Hill, 2001, -230 p.
3. Baehr M. Duns' topical diagnosis in neurology; Anatomy, Physiology, Signs, Symptoms / M. Baehr, M. Frotscher. -- 4th ed. - New York: Thienne, 2005. - 531 p.
4. Biazis P. W. Localization in Clinical Neurology / P. W. Brazis, J. C. Masdeu, J. Biller. - 5 th ed.- Philadelphia : Lippincott Williams & Wilkins, 2007. - 422 p.
5. Biller J. Practical Neurology / J. Biller. -- 2nd ed. - Philadelphia: Lippincott-Raven, 2008. - 846 p.
6. Brillman J. In a page Neurology / J. Brillman, S. Kahan. - Lippincott Williams & Wilkins, 2005, -232 p.
7. Ellison D. Neuropathology: a reference text of CNS pathology / D. Ellison [et al.]. - 2nd ed. - Edinburgh : Mosby, 2004. -145 p.
8. Fahn S. Principles and practice of movement disorders / S. Fahn, J. Jankovic, M. A. Stanley, M. Hallett. - 2nd ed. - Elsevier, 2011. - 556 p.

9. Glick T. Neurologic skills: examination and diagnosis / T. Glick. - 5 th ed. - New York : J. B. Lippincott, 2002. - 363 p.
10. Mowzoon N. Neurology Board Review (An Illustrated Study Guide) / N. Mowzoon, K. Fleming. - Informa Healthcare, 2007. - 1003 p.
11. Mumenthaler M. Neurology / M. Mumenthaler, H. Mattle. - 4 th ed. - Thieme, 2004. - 992 p.
12. Nolte J. The Human Brain: An Introduction to Its Functional Anatomy / J. Nolte. - 6 th ed. - Philadelphia (PA): Mosby; Elsevier, 2009. - 720 p.
13. Panayiotopoulos C. P. The Epilepsies. Seizures, Syndromes, and Management / C. P. Panayiotopoulos. - Bladon Medical Publishing, 2005. - 190 p.
14. References and suggested reading. Mumentahaler M. Fundamentalis of neurology / M. Mumentahaler – Thieme Stuttgart – New York.
15. Rolikamm R. Color atlas of Neurology / R. Rolikamm. - Thieme, 2004. - 440 p.
16. Rowland L. P. Merritt's Textbook of Neurology / L. P. Rowland. -10 th ed. - Philadelphia : Lippincott Williams & Wilkins, 2000. - 180 p.
17. Shkrobot S. I. Neurology in lectures / S. I. Shkrobot, I. I. Hara. - Ukimedknyha, 2008. - 319 p.

Informational resources

1. Department nervous disease ZSMU. – Access mode : http://www.doc.zsmu.edu.ua
2. Standards of medical care in neurology. - Access mode : http://neurology.com.ua/standarty-okazaniya-medicinskoj-pomoshhi-po-specia
3. Міжнародний неврологічний журнал=International Neurological Journal. - Access mode : http://www.mif-ua.com/archive/mezhdunarodnyij-nevrologicheskij-zhurnal/numbers
4. Практична ангіологія=Practical Angiology. - Access mode : http://angiology.com.ua/en-site-page-about
5. The Lancet Neurology. - Access mode : www.thelancet.com/neurology
6. The international Cochrane Collaboration. - Access mode : http://www.cochrane.org