

**MEDICAL UNIVERSITY OF PLOVDIV**  
**FACULTY OF MEDICINE**

**SYLLABUS**

**NEUROLOGY**

Approved by the Department Council - Protocol №3/26.05.2022

Approved by the Faculty Council – Protocol №6/15.06.2022

**Name of course:**

Neurology

**Syllabus**

| Discipline | Final exam/<br>semester | Auditorium classes |          |           |      | ECTS non-auditorium classes | ECTS total | Academic hours in years and semesters |      |
|------------|-------------------------|--------------------|----------|-----------|------|-----------------------------|------------|---------------------------------------|------|
|            |                         | Total              | Lectures | Practices | ECTS |                             |            | IV year                               |      |
| Neurology  | VIII                    |                    |          |           |      | 2.0                         | 6.0        | VII                                   | VIII |
|            |                         | 120                | 60       | 60        | 4.0  |                             |            | 2/2                                   | 2/2  |

**Type of course according to the Unified Governmental Regulations:**

Compulsory

**Educational level:**

Magister (Master)

**Teaching methods:**

Lectures, exercises, self-study.

**Length of training:**

Two semesters

**Hours:**

30 hours of lectures, 30 hours of practical training exercises

**Auxillary teaching aids:**

Multimedia presentations, discussions, demonstration of patient-based cases, abnormal findings of EMG, EEG, Doppler sonography, CT, MRI and angiography approaches

**Assessment forms:**

Continuous assessment during the semesters, 1 colloquium per semester, entrance exam test on general neurology, written exam on clinical neurology and practical exam

**Rating:**

The average rating is based on colloquiums passed during the semesters; the written and theoretical exams (after a successful entrance test with a threshold of 65% correct answers).

**Note:**

If there is some uncertainty about the final rating, additional questions can be asked in relation to the items from the written exam or lapses from the practical exam.

**Semestrial exam:**

Entrance tests, written and practical exam.

**Leading lecturer:**

Senior qualified lecturer from the Department of Neurology

**Department:** Neurology

## ANNOTATION

**The main aim** of the clinical discipline of Neurology is theoretical and practical training of future physicians for the comprehensive care of the neurological patient, including the ability to assess the need for specialized consultative neurological help or emergency hospitalization of the patient in a hospital for active treatment.

**The teaching courses of Neurology** are as follows:

**General Neurology** which includes:

- taking the case history and examining the patient;
- investigation and identification of the symptoms and syndromes of the impairment of the central nervous system (CNS) and peripheral nervous system (PNS);
- the possibilities of making a topical diagnosis by clinical, laboratory, neurophysiological and neuroimaging approaches.

**Clinical Neurology.** Contemporary and challenging neurological diseases:

Cerebrovascular, inflammatory, degenerative, demyelinating, movement disorders, epilepsy, headache and other paroxysmal conditions, the pathological disorders of ANS, the tumor and traumatic injuries of CNS, dementias are examined by an accepted algorithm: etiology, pathology, pathogenesis, classifications, clinical features, diagnosis and differential diagnosis, treatment, prognosis and prevention.

## THE MAIN GOALS OF THE TEACHING PROGRAMME

Gaining knowledge and skills in applying contemporary approaches and means for the diagnosis, treatment and prevention.

- theoretical knowledge about the anatomy and physiology of the nervous system, symptoms and syndromes of the nervous system impairment, criteria for topical diagnostics of the injuries of CNS, PNS and ANS;

- gaining practical skills in taking a neurological case history and working with a reflex hammer;
- neurological examination with identification of pathological reflexes, sensory and motor disturbances, coordination syndromes and higher cortical dysfunctions
- establishing a topical diagnosis;
- establishing a clinical diagnosis;
- specialized examination of CNS and PNS (EEG, EMG, Doppler sonography, EP), neuroimaging (CT, MRI, cerebral angiography), laboratory (blood, cerebrospinal fluid examination) approaches;
- identification of abnormal laboratory, electrophysiological and neuroimaging findings;
- choosing the adequate therapeutic approach under emergency conditions.

## **EXPECTED RESULTS**

After the completion of the course, student should have knowledge and skills as follows:

- to take a detailed neurological case history
- to know the main symptoms and syndromes of the CNS and PNS injuries
- to possess practical skills for the diagnostics of the general cerebral and focal neurological symptoms
- the ability to make a topical diagnosis
- to be aware of the etiology, pathogenesis, clinical features and diagnostic procedures of neurological diseases
- to know the clinical approaches, laboratory findings and neuroimaging features of different neurological conditions and the main indications for hospitalization
- to know the main principles of treatment under emergency conditions
- to know the primary and secondary means of prevention of the main neurological diseases; to know and recommend related diet regimens and physiotherapy when needed

## LECTURES PROGRAMME

IVth year , VIIth semester

| <b>№</b>   | <b>TITLE</b>   | <b>HOURS</b> | <b>DATE</b> |
|------------|--|--------------|-------------|
| <b>1.</b>  | Short history of Neurology<br>Reflex activity and its clinical significance  | <b>2 h</b>   |             |
| <b>2.</b>  | Somatic sensation. Sensory disorders: clinical significance  | <b>2 h</b>   |             |
| <b>3.</b>  | Syndromes of sensory disorders. Pain.  | <b>2 h</b>   |             |
| <b>4.</b>  | Motor system and motor activity.<br>Pyramidal system. Muscle tone  | <b>2 h</b>   |             |
| <b>5.</b>  | Extrapyramidal system and its disorders.<br>Main extrapyramidal syndromes  | <b>2 h</b>   |             |
| <b>6.</b>  | Cerebellum and coordination of movements.<br>Clinical significance of their disorders. Gait and posture                                      | <b>2 h.</b>  |             |
| <b>7.</b>  | Autonomic nervous system and autonomic disorders   | <b>2 h</b>   |             |
| <b>8.</b>  | General neurological syndromes: syndromes of meningeal irritation, alterations of consciousness, syndromes of elevated intracranial pressure | <b>2 h</b>   |             |
| <b>9.</b>  | Localization of cerebral functions. Topical diagnosis of brain diseases  | <b>2h</b>    |             |
| <b>10.</b> | Localization of cerebral functions. Topical diagnosis of individual spinal nerve lesions, root lesions, plexus lesions                       | <b>2 h</b>   |             |

|            |   |            |  |
|------------|---|------------|--|
| <b>11.</b> | Localization of cerebral functions. Topical diagnosis of syndromes of spinal cord and brainstem lesions | <b>2 h</b> |  |
| <b>12.</b> | Localization of cerebral functions. Higher cortical functions and their disorders                       | <b>2 h</b> |  |
| <b>13.</b> | Localization of cerebral functions.<br>Syndromes of lesions of the cerebral lobes                       | <b>2 h</b> |  |
| <b>14.</b> | Neuroradiology and magnetic resonance imaging (MRI)   | <b>2 h</b> |  |
| <b>15.</b> | Clinical neurophysiology.<br>Electroencephalography (EEG). Electromyography (EMG)                       | <b>2 h</b> |  |

**TOTAL: 30 h.**

## **LECTURES PROGRAMME**

**IVth year, VIIIth semester**

| <b>Nº</b> | <b>TITLE</b>  | <b>HOURS</b> | <b>DATE</b> |
|-----------|---|--------------|-------------|
| <b>1.</b> | Diseases of the peripheral nervous system – Bell’s palsy, Trigeminal neuralgia. Herpes zoster   | <b>2 h</b>   | .           |
| <b>2.</b> | Polineurites and polyneuropathies. Guillain-Barre syndrome. Cervical and lumbar radiculopathies | <b>2 h</b>   |             |
| <b>3.</b> | Meningites. Neurosyphilis   | <b>2 h</b>   |             |
| <b>4.</b> | Ist part<br>Encephalomyelites   | <b>2 h</b>   |             |

|            |  |             |  |
|------------|--|-------------|--|
| <b>5.</b>  | 2 <sup>nd</sup> part<br>Encephalomyelites. Encephalopathies. | <b>2 h</b>  |  |
| <b>6.</b>  | 1 <sup>st</sup> part<br>Cerebrovascular diseases.            | <b>2 h</b>  |  |
| <b>7.</b>  | 2 <sup>nd</sup> part<br>Cerebrovascular diseases.            | <b>2 h.</b> |  |
| <b>8.</b>  | Acute stroke treatment                                       | <b>2 h.</b> |  |
| <b>9.</b>  | Degenerative diseases. Dystrophinopathies                    | <b>2 h</b>  |  |
| <b>10.</b> | Epilepsy   | <b>2 h</b>  |  |
| <b>11.</b> | Neuroses. Psychosomatic disorders                            | <b>2 h</b>  |  |
| <b>12.</b> | Headache   | <b>2 h.</b> |  |
| <b>13.</b> | Brain tumors   | <b>2 h</b>  |  |
| <b>14.</b> | Traumatic injuries of nervous system                         | <b>2 ч.</b> |  |
| <b>15.</b> | Emergencies in neurological practice.                        | <b>2 ч.</b> |  |

**TOTAL: 30 h.**

## PROGRAMME OF EXERCISES

IVth year, VIIth semester

| <b>№</b>   | <b>TITLE</b>   | <b>HOURS</b> | <b>DATE</b> |
|------------|--|--------------|-------------|
| <b>1.</b>  | Introduction. Short history of neurology<br>Neurological case history  | <b>2 h</b>   |             |
| <b>2.</b>  | Normal reflexes  | <b>2h</b>    |             |
| <b>3.</b>  | Pathological reflexes. Clinical significance   | <b>2 h.</b>  |             |
| <b>4.</b>  | Somatic sensation. Anatomy and physiology.<br>Examination methods  | <b>2 h</b>   |             |
| <b>5.</b>  | Sensory syndromes - clinical significance  | <b>2 h</b>   |             |
| <b>6.</b>  | Meningeal syndrome. Symptoms of meningeal irritation.<br>Cerebrospinal fluid examination. CSF syndromes                            | <b>2 h</b>   |             |
| <b>7.</b>  | Motor system and motor activity.<br>Pyramidal system. Muscle tone and muscle strength.<br>Syndromes of disordered motor function   | <b>2 h</b>   |             |
| <b>8.</b>  | Motor system and motor activity.<br>Extrapyramidal system and its disorders  | <b>2 h</b>   |             |
| <b>9.</b>  | Motor system and motor activity.<br>Coordination of movements. Anatomy and physiology.<br>Clinical significance of their disorders | <b>2 h</b>   |             |
| <b>10.</b> | Cranial nerves I-VII.. Anatomy and physiology.<br>Examination methods. Symptomatology  | <b>2 h</b>   |             |



|            |   |            |  |
|------------|---|------------|--|
| <b>11.</b> | Cranial nerves VIII- XII. Anatomy and physiology.<br>Examination methods. Symptomatology.<br>Bulbar palsy. Pseudobulbar palsy | <b>2 h</b> |  |
| <b>12.</b> | Spinal nerves. Spinal cord syndromes.<br>Brainstem syndromes  | <b>2 h</b> |  |
| <b>13.</b> | Internal capsule syndrome. Syndromes of lesion of the cerebral cortex   | <b>2 h</b> |  |
| <b>14.</b> | Neurophysiological methods of examination of the nervous system   | <b>2 h</b> |  |
| <b>15.</b> | Topical diagnosis   | <b>2 h</b> |  |

**TOTAL : 30 h**

### **PROGRAMME OF EXERCISES**

**IVth year, VIIIth semester**

| <b>Nº</b> | <b>TITL E</b>  | <b>HOURS</b> | <b>DATE</b> |
|-----------|--|--------------|-------------|
| <b>1.</b> | Meningites. Diagnosis. Differential diagnosis. Treatment | <b>2 h</b>   |             |
| <b>2.</b> | Colloquium<br>General neurology                          | <b>2 h</b>   |             |

|     |  |     |  |
|-----|--|-----|--|
| 4.  | Peripheral nervous system disorders. Polyneurites. Polyradiculoneurites. Herpes zoster. Tabes dorsalis       | 2 h |  |
| 5.  | Encephalomyelites. Diagnosis. Differential diagnosis. Treatment  | 2 h |  |
| 6.  | Encephalopathies. Diagnosis. Differential diagnosis. Treatment   | 2 h |  |
| 7.  | Haemorrhagic stroke. Diagnosis. Differential diagnosis. Rehabilitation                                       | 2 h |  |
| 8.  | Subarachnoid haemorrhage. Diagnosis. Differential diagnosis. Treatment. Rehabilitation.                      | 2 h |  |
| 9.  | Ischaemic stroke. Diagnosis. Differential diagnosis. Treatment. Rehabilitation.                              | 2 h |  |
| 10. | Brain tumors. Spinal cord tumors. Diagnosis. Treatment   | 2 h |  |
| 11. | Traumatic injuries of the nervous system.  | 2 h |  |
| 12. | Degenerative diseases. Distrophinopathies. Diagnosis. Treatment  | 2 h |  |
| 13. | Epilepsy. Status epilepticus. Diagnosis. Differential diagnosis. Modern treatment                            | 2 h |  |
| 14. | Neurological syndromes of some internal diseases – funicular myelosis, collagenoses, polymyosites, SLE, etc. | 2 h |  |
| 15. | Headache. Neuroses   | 2 h |  |

**TOTAL: 30 h.**

## **LECTURES**

### ***Lecture № 1 – 2 hours***

#### **SHORT HISTORY OF NEUROLOGY. REFLEX ACTIVITY AND ITS CLINICAL SIGNIFICANCE**

1. Definitions
2. Classifications (types of reflexes)
3. Examination of reflexes
4. Reflex abnormalities
  - 4.1. Quantitative abnormalities
  - 4.2. Qualitative changes of the reflexes (pathological reflexes)
5. Clinical significance
6. Dependence of reflex changes upon site of the lesion

### ***Lecture № 2 – 2 hours***

#### **SOMATIC SENSATION. SENSORY DISORDERS: CLINICAL SIGNIFICANCE**

1. Definition
2. Functional anatomy of sensation
3. Sensory system examination
  - 3.1. Examination of primary sensory modalities
  - 3.2. Examination of complex sensations
  - 3.3. Application of tests
4. Common signs of disordered general sensation

### ***Lecture № 3 – 2 hours***

#### **SYNDROMES OF SENSORY DISORDERS. PAIN**

1. Syndromes of peripheral nerve lesion
2. Sensory syndromes of spinal nerve roots
3. Sensory syndrome of the spinal cord
4. Sensory syndromes due to lesions of the brainstem
5. Sensory syndromes due to lesion of the thalamus
6. Sensory syndromes due to lesions of the sensory cortex
7. Psychogenic sensory disturbances
8. Pain

### ***Lecture № 4 – 2 hours***

## **THE MOTOR SYSTEM AND MOTOR ACTIVITY. PYRAMIDAL SYSTEM. MUSCLE TONE**

1. Pyramidal (corticospinal) system
2. Anatomy and physiology of the motor act
3. Terminology and definitions.
4. Examination of the motor system
  - 4.1. Muscle volume
  - 4.2. Muscle strength
5. Syndromes of disordered motor function
  - 5.1. Syndrome of lower motor neuron lesion
  - 5.2. Upper motor neuron syndrome
  - 5.3. Specific syndromes according to the location of lesion along the upper (pyramidal tract) and lower motor neuron
6. Muscle tone. Syndromes of disordered muscle tone

*Lecture № 5 – 2 hours*

## **THE EXTRAPYRAMIDAL SYSTEM AND ITS DISORDERS. MAIN EXTRAPYRAMIDAL SYNDROMES**

1. General considerations
2. Anatomy and physiology of the extrapyramidal system
3. Clinical-pathological correlation in lesions of the basal ganglia
4. Examination of the extrapyramidal system
5. Involuntary movements
  - 5.1. Tremor
  - 5.2. Chorea
  - 5.3. Hemiballism
  - 5.4. Athetosis
  - 5.5. Dystonia
  - 5.6. Myoclonus
  - 5.7. Tics
6. Main extrapyramidal syndromes
  - 6.1. Parkinsonian syndrome
  - 6.2. Choreic syndrome

*Lecture № 6 – 2 hours*

## **THE CEREBELLUM AND COORDINATION OF MOVEMENTS. CLINICAL SIGNIFICANCE OF THEIR DISORDERS. GAIT AND POSTURE**

1. General considerations
2. Anatomy and physiology of coordination
3. Anatomy of the cerebellum
4. Physiology and pathophysiology of the cerebellum
5. Main signs of cerebellar dysfunction
6. Clinical examination of coordination

7. Cerebellar syndromes
  - 7.1.Cerebellar syndrome of midline lesions
  - 7.2.Syndrome of cerebellar hemispheric lesion
  - 7.3.Syndrome of pancerebellar disorders
8. Syndromes of disturbed coordination
9. Gait and posture

***Lecture № 7 – 2 hours***

**AUTONOMIC NERVOUS SYSTEM AND AUTONOMIS DISORDERS**

1. General considerations
2. Anatomophysiology of ANS
3. Tests and abnormalities of the autonomic nervous system
4. Autonomic innervation of the pupils and its disorders
5. Anatomy of of bladder function and its disturbances
6. Clinical syndromes of disordered autonomic function
7. Clinical hypothalamic syndromes

***Lecture № 8 – 2 hours***

**GENERAL NEUROLOGICAL SYNDROMES: SYNDROMES OF MENINGEAL IRRITATION, ALTERATIONS OF CONSCIOUSNESS, SYNDROMES OF ELEVATED INTRACRANIAL PRESSURE**

1. General considerations
2. Syndrome of meningeal irritation
3. Syndrome of cerebrospinal fluid changes
  - 3.1.Bacterial meningitis
  - 3.2.Tuberculous meningitis
  - 3.3.Viral meningitis
  - 3.4.Subarachnoid haemorrhage
  - 3.5.Meningism
4. Non-obligatory involvement of cranial nerves of brain tissue
5. Non-obligatory syndrome of psychic changes
6. Clinical features in infants
7. Consciousness. Alterations of consciousness. Brain death
  - 7.1.Definition
  - 7.2.Coma

*Lecture № 9 – 2 hours*

**LOCALIZATION OF CEREBRAL FUNCTIONS. TOPICAL DIAGNOSIS OF BRAIN DISEASES**

1. Localization problem
2. Lateralization of cerebral functions
3. Brodmann's fields
4. Brain syndromes

*Lecture №10 – 2 hours*

**LOCALIZATION OF CEREBRAL FUNCTIONS. TOPICAL DIAGNOSIS OF INDIVIDUAL SPINAL NERVE LESIONS, ROOT LESIONS AND PLEXUS LESIONS**

1. General considerations
2. Anatomy of the peripheral nervous system
3. Clinical syndromes of spinal nerves and root lesions
4. Clinical syndromes of the plexus lesions
5. Clinical syndromes of individual peripheral spinal nerve lesion

*Lecture № 11 – 2 hours*

**LOCALIZATION OF CEREBRAL FUNCTIONS. TOPICAL DIAGNOSIS OF SYNDROMES OF SPINAL CORD AND BRAINSTEM LESIONS**

1. Functional anatomy
2. The spinal cord
  - 2.1. Syndrome of spinal ganglion
  - 2.2. Syndrome of posterior roots
  - 2.3. Syndrome of posterior tracts
  - 2.4. Syndrome of posterior horn
  - 2.5. Syndrome of the gray matter
  - 2.6. Syndrome of combine damage of posterior funiculi and corticospinal tracts
  - 2.7. Syndrome of anterior horn
  - 2.8. Syndrome of combined anterior horns and pyramidal tracts damage
  - 2.9. Syndrome of corticospinal tracts
  - 2.10. Syndrome of combined involvement of posterior funiculi, spinocerebellar pathways, and possibly pyramidal tracts
  - 2.11. Syndrome of hemisection of the spinal cord
  - 2.12. Syndrome of complete transection of the spinal cord
  - 2.13. Syndromes of lesions at different levels of the spinal cord
3. Brainstem
  - 3.1 Focal brainstem syndromes – general considerations

- 3.2 Syndromes of medulla oblongata lesions
- 3.3 Syndromes of pons lesions
- 3.4 Syndromes of midbrain lesions.

*Lecture №12 – 2 hours*

**LOCALIZATION OF CEREBRAL FUNCTIONS.  
HIGHER CORTICAL FUNCTIONS AND THEIR DISORDERS**

- 1. Definitions and neurological terms, associated with higher cortical functions and their disorders
- 2. Agnosia
- 3. Apraxia
- 4. Language, speech and aphasia.

*Lecture № 13 – 2 hours*

**LOCALIZATION OF CEREBRAL FUNCTIONS.  
SYNDROMES OF LESIONS OF THE CEREBRAL LOBES**

- 1. Functional anatomy of the cerebral lobes and cerebral cortex
- 2. Functional organization of the cortex
- 3. Syndromes of the cerebral lobes – general considerations
- 4. Frontal lobe
- 5. Parietal lobe
- 6. Temporal lobe
- 7. Occipital lobe
- 8. Subcortical syndromes of the cerebral hemisphere

*Lecture № 14 – 2 hours*

**NEURORADIOLOGY AND MAGNETIC RESONANCE IMAGING**

- 1. Neuroradiology
  - 1.1.Plain radiology
  - 1.2.Computed tomography
  - 1.3.Invasive investigations
  - 1.4.Myelography
  - 1.5.Cerebral angiography
- 2. Magnetic resonance imaging (MRI)

*Lecture № 15 – 2 hours*

**CLINICAL ELECTROPHYSIOLOGY**

1. Electroencephalography (EEG)
  - 1.1. Neurophysiological bases of EEG
  - 1.2. Normal EEG
  - 1.3. EEG abnormalities
2. Electromyography (EMG) and nerve conduction studies
  - 2.1. Nerve conduction studies
  - 2.2. Electrodiagnostic syndromes
3. Indications for electrodiagnostic investigation
4. Evoked potential study

*Lecture № 1 – 2 hours*

**DISEASES OF THE PERIPHERAL NERVOUS SYSTEM. BELL'S PALSY. TRIGEMINAL NEURALGIA. HERPES ZOSTER**

1. Plexus and root lesions
2. Bell's palsy
  - 2.1. Etiology and pathology
  - 2.2. Clinical features
  - 2.3. Treatment and prognosis
3. Trigeminal neuralgia
  - 3.1. Etiology
  - 3.2. Clinical features
  - 3.3. Complications
  - 3.4. Treatment
4. Herpes zoster

*Lecture № 2 – 2 hours*

**POLYNEURITES AND POLYNEUROPATHIES. GUILLAIN-BARRE SYNDROME. CERVICAL AND LUMBAR RADICULOPATHIES.**

1. Polyneurites
2. Polyneuropathies
  - 2.1. Patterns of injury
  - 2.2. Classification
  - 2.3. Syndrome of polyneuropathy
3. Guillain-Barre syndrome
  - 3.1. Definition
  - 3.2. Etiology
  - 3.3. Clinical features
  - 3.4. Complications
  - 3.5. Diagnosis and differential diagnosis
  - 3.6. Treatment and prognosis



4. Diabetic polyneuropathy
5. Alcoholic polyneuropathy
6. Cervical and lumbar radiculopathies

***Lecture № 3 – 2 hours***

**MENINGITES. NEUROSYPHILIS**

1. Bacterial meningitis
  - 1.1. Etiology. Pathogenesis
  - 1.2. Classification
  - 1.3. Clinical features
  - 1.4. Diagnostic procedures
  - 1.5. Treatment
2. Tuberculous meningitis
  - 2.1. Definition. Risk factors
  - 2.2. Clinical features
  - 2.3. Complications
  - 2.4. Diagnosis
  - 2.5. Treatment
3. Viral meningitis
  - 3.1. Definition. Risk factors
  - 3.2. Clinical features
  - 3.3. Diagnosis and treatment
4. Syphilis. Neurological complications

***Lecture № 4 – 2 hours***

**Ist part. ENCEPHALOMYELITES.** Herpes Simplex Virus Encephalitis. AIDS encephalitis. Creutzfeld-Jakob Disease. Subacute Sclerosing Panencephalitis. Lyme Disease

1. Herpes simplex virus encephalitis.
  - 1.1. Etiology and pathology
  - 1.2. Clinical features
  - 1.3. Diagnosis and treatment
2. AIDS encephalitis
  - 2.1. Etiology and pathology
  - 2.2. Clinical features
  - 2.3. Diagnosis and treatment
3. Creutzfeld-Jakob Disease.
  - 3.1. Etiology and pathology
  - 3.2. Clinical features
  - 3.3. Diagnosis and treatment
4. Subacute Sclerosing Panencephalitis.
5. Lyme Disease

***Lecture № 5 – 2 hours***

**2<sup>nd</sup> part. ENCEPHALOMYELITIS. Multiple sclerosis**

1. Etiology and epidemiology
2. Pathology and pathogenesis
3. Clinical features
4. Diagnosis and differential diagnosis
5. Treatment
6. Prognosis

***Lecture № 6 – 2 hours***

**1<sup>st</sup> part. CEREBROVASCULAR DISEASES**

1. Haemorrhagic stroke
  - 1.1. Definition
  - 1.2. Etiology
  - 1.3. Pathogenesis
  - 1.4. Classification
2. Subarachnoid haemorrhage
  - 2.1. Clinical features
  - 2.2. Diagnosis and differential diagnosis
3. Intracerebral haemorrhage
  - 3.1. Clinical features
  - 3.2. Diagnosis and differential diagnosis

***Lecture №7 – 2 hours***

**2<sup>nd</sup> part. CEREBROVASCULAR DISEASES**

1. Ischaemic stroke
  - 1.1 Definition
  - 1.2 Etiology. Cerebrovascular risk factors
  - 1.3 Pathogenesis
  - 1.4 Classification
2. Transient ischaemic attacks
3. Ischaemic stroke. Minor stroke. Lacunar infarcts
  - 3.1. Clinical features
  - 3.2. Diagnostic procedures
  - 3.3. Differential diagnosis

***Lecture №8 – 2 hours***

**ACUTE STROKE TREATMENT**

1. Treatment of acute ischaemic stroke
2. Treatment of subarachnoid haemorrhage
3. Treatment of intracerebral haemorrhage
4. Stroke prevention
5. Stroke prognosis

***Lecture №9 – 2 hours***

**DEGENERATIVE DISEASES. DYSTROPHYNOPATHIES**

1. Alzheimer's disease. Pick's disease
2. Parkinson's disease
3. Myasthenia gravis
4. Amyotrophic lateral sclerosis
5. Hereditary motor and sensory polyneuropathy (Charcot-Marrie-Tooth disease). Spinal muscular atrophy.
6. Dystrophinopathies
7. Myotonic dystrophy

***Lecture №10 – 2 hours***

**EPILEPSY**

1. Definition
2. Etiology. Epidemiology
3. Classification of epileptic seizures
4. Guidelines for evaluation after the first seizure
5. Clinical features
6. Diagnosis
7. Principles of antiepileptic drug therapy
8. Status epilepticus
9. Psychosocial and psychiatric issues
10. Practical advice for the epileptic patient

***Lecture №11 – 2 hours***

**THE NEUROSES AND PERSONALITY DISORDERS**

1. Neuroses
  - 1.1. Incidence
  - 1.2. Classifications

2. Anxiety neurosis and panic attacks
3. Phobic neurosis
4. Obsessive-compulsive neurosis
5. Hysteria (Briquet Disease, Somatization disorder).
  - 5.1. Special hysterical syndromes
  - 5.2. Principles in treatment of hysteria
6. Hypochondriasis

***Lecture №12 – 2 hours***

**HEADACHE**

1. Definition
2. Approach to the patient with headache
3. Acute headache
4. Chronic headache
5. Primary headaches
  - 5.1. Tension-type headache
  - 5.2. Migraine headache
  - 5.3. Cluster headache
  - 5.4. Exertional headaches
6. Secondary headaches

***Lecture №13 – 2 hours***

**BRAIN TUMORS**

***Lecture №14 – 2 hours***

**TRAUMATIC INJURIES OF THE NERVOUS SYSTEM**

***Lecture №15 – 2 hours***

**EMERGENCIES IN NEUROLOGICAL PRACTICE**

1. Nonepileptic paroxysmal conditions
2. Sleep and its disorders
3. Examination methods

# PRACTICAL EXERCISES

## VIIth semester

### *Exercise № 1 – 2 hours*

Introduction. Short history of neurology.  
Neurological case history

### *Exercise № 2 – 2 hours*

Examination of normal reflexes

- Gaining practical skills in working with reflex hammer
- Examination of deep tendon reflexes
- Examination of superficial reflexes
- Examination of patient with normal reflexes

### *Exercise № 3– 2 hours*

Pathological reflexes

- Gaining practical skills in examination of pathological reflexes
- Examination of patient with pathological reflexes
- Identification of reflex abnormalities
- Determination of the clinical significance of reflex changes

### *Exercise № 4 – 2 hours*

Somatic sensation. Anatomy and physiology. Examination methods

- Gaining practical skills in examination of primary sensory modalities
- Gaining practical skills in examination of complex sensations
- Application of tests
- Examination of patient with positive sensory signs
- Examination of patient with negative sensory signs

### *Exercise № 5 – 2 hours*

Sensory syndromes. Clinical significance

- Gaining practical skills in examination of patient with syndrome of peripheral nerve lesion
- Gaining practical skills in examination of patient with syndrome of spinal nerve root
- Gaining practical skills in examination of patient with syndrome of spinal cord
- Gaining practical skills in examination of patient with syndrome of brainstem, thalamus, sensory cortex and psychogenic sensory disturbances

***Exercise № 6 – 2 hours***

Meningeal syndrome. Symptoms of meningeal irritation. Cerebrospinal fluid examination. CSF syndromes

- Gaining practical skills in examination of patient with meningeal syndrome
- Application of tests
- Examination of patient with meningeal syndrome

***Exercise № 7 – 2 hours***

Motor system and motor activity. Pyramidal system. Muscle tone and muscle strength. Syndromes of disordered motor function

- Gaining practical skills in examination of muscle volume and muscle strength
- Assessment of muscle tone
- Application of tests for examination of latent hemiparesis
- Examination of patient with upper motor neuron lesion
- Examination of patient with lower motor neuron lesion

***Exercise № 8 – 2 hours***

Motor system and motor activity. Extrapyrarnidal system and its disorders

- Examination of patient with Parkinsonian syndrome or other extrapyramidal syndromes
- Application of tests

***Exercise № 9 – 2 hours***

Motor system and motor activity. Coordination of movements. Anatomy and physiology. Clinical significance of their disorders

- Gaining practical skills in examination of coordination
- Application of tests for detection of static ataxia
- Application of tests for detection of locomotor ataxia
- Application of tests for detection of dynamic ataxia
- Examination of patient with cerebellar syndrome or other syndromes of disturbed coordination

***Exercise № 10 – 2 hours***

Cranial nerves I-VII.. Anatomy and physiology. Examination methods. Symptomatology.

- Gaining practical skills in examination of cranial nerves I-VI
- Application of tests for main clinical signs and syndromes
- Examination of patient with cranial nerve disorder

***Exercise № 11 – 2 hours***

Cranial nerves VIII- XII. Anatomy and physiology. Examination methods. Symptomatology. Bulbar palsy. Pseudobulbar palsy

- Gaining practical skills in examination of cranial nerves VII-XII
- Application of tests for main clinical signs and syndromes
- Examination of patient with bulbar palsy
- Examination of patient with pseudobulbar palsy

***Exercise № 12 – 2 hours***

Spinal nerves. Spinal cord syndromes. Brainstem syndromes

- Gaining practical skills in examination of patient with spinal cord syndromes
- Gaining practical skills in examination of patient with brainstem syndromes
- Application of tests for main clinical signs and syndromes
- Examination of patient with spinal cord or brainstem syndrome

***Exercise № 13 – 2 hours***

Internal capsule syndrome. Syndromes of lesion of the cerebral cortex

- Gaining practical skills in examination of patient with internal capsule syndrome
- Application of tests for main clinical signs and syndromes
- Examination of patient with internal capsule syndrome or syndrome of lesion of the cerebral cortex

***Exercise № 14 – 2 hours***

Neurophysiological methods of examination of the nervous system

- Indications for electrodiagnostic investigation
- Electroencephalography
- Electromyography
- Evoked potentials study

***Exercise № 15 – 2 hours***

Topical diagnosis. Complete neurological examination

- Complete neurological examination
- Examination of patient with focal neurological signs

# PRACTICAL EXERCISES

## VIIIth semester

### *Exercise № 1 – 2 hours*

Meningites. Diagnosis. Differential diagnosis. Treatment

- Examination of patient with meningeal irritation

### *Exercise № 2– 2 hours*

Colloquium

General neurology

### *Exercise № 3 – 2 hours*

Peripheral nervous system disorders. Radiculites. Bell's palsy. Trigeminal neuralgia

- Examination of patient with Bell's palsy and trigeminal neuralgia

### *Exercise № 4 – 2 hours*

Peripheral nervous system disorders. Polyneurites. Polyradiculoneurites. Herpes zoster. Tabes dorsalis

- Examination of patient with polyneuropathy

### *Exercise № 5 – 2 hours*

Encephalomyelites. Diagnosis. Differential diagnosis. Treatment

- Examination of patient with multiple sclerosis

### *Exercise № 6 – 2 hours*

Encephalopathies. Diagnosis. Differential diagnosis. Treatment

- Examination of patient with encephalopathy

### *Exercise № 7 – 2 hours*

Haemorrhagic stroke. Diagnosis. Differential diagnosis. Rehabilitation

- Examination of patient with haemorrhagic stroke

### *Exercise № 8 – 2 hours*

Subarachnoid haemorrhage. Diagnosis. Differential diagnosis. Treatment. Rehabilitation.

- Examination of patient with subarachnoid haemorrhage

### *Exercise № 9 – 2 hours*



Ischaemic stroke. Diagnosis. Differential diagnosis. Treatment. Rehabilitation.

- Examination of patient with ischaemic stroke

***Exercise № 10 – 2 hours – in Neurosurgery***

Brain tumors. Spinal cord tumors. Diagnosis. Treatment

***Exercise № 11 – 2 hours – in Neurosurgery***

Traumatic injuries of the nervous system.

***Exercise № 12 – 2 hours***

Degenerative diseases. Distrophinopathies. Diagnosis. Treatment

- Examination of patient with Parkinson's disease, Alzheimer's disease

***Exercise № 13 – 2 hours***

Epilepsy. Status epilepticus. Diagnosis. Differential diagnosis. Modern treatment

- Examination of patient with epilepsy

***Exercise № 14 – 2 hours***

Neurological syndromes in some internal diseases – funicular myelosis, collagenoses, polymyosites, SLE, etc

- Examination of patient with different neurological syndromes

***Exercise № 15 – 2 hours***

- Examination of patient with headache or patient with neurosis

## SYLLABUS NEUROLOGY

for 4<sup>th</sup> year medical students

### GENERAL NEUROLOGY

1. Neuron. Neuroglia. Neurotransmitters. Clinical significance
2. Reflex activity. Anatomy and physiology. Pathological changes of extero- and proprioceptive reflexes.
3. Reflex activity - pathological reflexes, spinal cord and stem-brain automatisms.
4. Anatomy and physiology of the general senses. Symptomology and pathophysiology of its disorders.
5. Sensory syndromes in damage to the peripheral nerves, posterior roots and posterior horns of the spinal cord. Thalamic and cortical sensory syndromes. Pain.
6. Conductive sensory disorder (in case of damage to the lateral and posterior columns of the spinal cord). Psychogenic sensory disorders.
7. Smell and taste. Anatomy and physiology. Disorders.
8. Visual, auditory and vestibular analyzers. Anatomy and physiology. Diseases.
9. Motor activity. Pyramidal system. Corticospinal tract. Anatomy and physiology. Central /upper motor neuron/ paralysis.
10. Motor activity. Pyramidal system. Corticobulbar tract. Anatomy and physiology. Pseudobulbar paralysis.
11. Lower motor neuron. Syndrome of lesions of the lower motor neuron, syndromes of lesions of anterior roots, plexuses, peripheral nerves.
12. Motor activity. Extrapyramidal system. Anatomical and physiological data. Parkinsonian syndrome.

13. Motor activity. Extrapyramidal system. Anatomical and physiological data. Chorea, athetosis, dystonia.
14. Muscle tone – anatomy and physiology. Examination. Disorders.
15. Coordination of movements: anatomy and physiology. Examination. Types of ataxia. Ataxia syndromes.
16. Anatomy and physiology of the cerebellum. Cerebellar syndromes.
17. Brainstem syndromes (anatomical and physiological data). Alternating syndromes of the midbrain, pons and medulla oblongata.
18. Cranial nerves - III, IV and VI - anatomical-physiology, examination, syndromes of impairment.
19. Facial nerve – anatomy and physiology, examination. Peripheral and central paralysis of the facial nerve (differential diagnosis).
20. Bulbar group of cranial nerves. Anatomy and physiology. Examination. Bulbar paralysis.
21. Spinal cord. Anatomy and physiology. Syndromes of damage. Syndrome of complete transection at different levels (cervical intumescence, thoracic region, lumbar intumescence); Brown-Sequard syndrome; cone and cauda equina syndrome.
22. Frontal and parietal lobes - anatomical and physiological data. Syndromes of damage.
23. Temporal and occipital lobes - anatomical and physiological data. Syndromes of damage.
24. Internal capsule - anatomical and physiological data. Internal capsule syndromes.
25. Gnosis, praxis and their disorders (agnosia, apraxia).
26. Speech disorders. Types of aphasia.
27. Autonomic nervous system. Anatomical and physiological data. Syndromes of impairment: peripheral, spinal cord and brainstem syndromes.
28. Reticular formation and limbic system. Anatomical and physiological data and clinical significance.

29. Consciousness. Quantitative disorders of consciousness. Examination and treatment in cases with neurological coma.
30. Meningeal syndrome (syndrome of meningoradicular irritation) .
31. Cerebrospinal fluid system. Anatomy and physiology. Cerebrospinal fluid - normal composition and cerebrospinal fluid syndromes.
32. Cerebral circulation. Anatomy and physiology.
33. X-ray diagnostics in neurology. Cerebral angiography. Myelography. Neuroimaging methods of examination - computed axial tomography, magnetic resonance imaging.
34. Clinical electromyography. Clinical electroencephalography. Indications for research and main areas of application in neurology.

## **CLINICAL NEUROLOGY**

35. Lumbar radiculopathies. Lumbar disc herniation
36. Cervical radiculopathies. Cervical osteochondrosis. Cervical disc herniation
37. Facial nerve neuritis.
38. Neuralgia and neuritis of the trigeminal nerve.
39. Polyneuritis and polyneuropathy. Guillain-Barre polyradiculoneuritis.
40. Polyneuropathy. Diabetic, alcoholic and drug polyneuropathy.
41. Viral (serous) meningitis
42. Epidemic (meningococcal) meningitis and other purulent meningitis
43. Tuberculous meningitis.
44. Encephalitis. Definition, Classification. General clinical characteristics.
45. Secondary (perivenous) encephalitis in acute infections and after vaccinations.

46. Myelitis and myelopathy. Transverse and disseminated myelitis.
47. Herpes simplex encephalitis. Neurological manifestations of AIDS.
48. Multiple sclerosis.
49. Chronic and slow viral infections. Hyperkinetic progressive panencephalitis.
50. Neurosyphilis. Tabes dorsalis.
51. Headache. Main types of primary and secondary type headache. Migraine.
52. Headache. Main types of primary and secondary type headache. Tension headache. Cluster headache.
53. Transient ischaemic attacks (TIA)
54. Stroke. Intracerebral and cerebellar hemorrhages.
55. Stroke. Subarachnoid hemorrhage. Ventricular hemorrhage.
56. Stroke. Ischaemic strokes in the carotid system.
57. Stroke. Ischaemic strokes in the vertebro-basilar system.
58. Brain tumors. Classification. Cerebral and focal manifestations.
59. Tumors of the spinal cord and peripheral nerves (neurinoma of the pontocerebellar angle and cauda equina)
60. Concussion. Traumatic cerebrasthenia.
61. Contusion of the brain. Traumatic encephalopathy.
62. Subdural hematoma. Epidural hematoma.
63. Spinal cord injuries.
64. Myasthenia gravis. Myasthenic and cholinergic crisis.
65. Neural and spinal muscular atrophy.
66. Progressive muscular dystrophies.
67. Amyotrophic lateral sclerosis.
68. Epilepsy – definition, etiology, pathogenesis. Classification and clinical manifestations of epileptic seizures.

69. Epilepsy – diagnosis, differential diagnosis and treatment.
70. Status epilepticus – definition, classification, treatment.
71. Hepatolenticular degeneration.
72. Parkinson's disease
73. Cerebellar degenerative ataxias. Friedrich's disease.
74. Huntington's chorea.
75. Dementia. Alzheimer's disease. Pick's disease.

\* For each nosological unit of clinical neurology you need to present: definition, classification, data on etiology, pathogenesis, pathology, clinical manifestations, diagnosis with differential diagnosis and treatment.

### **RECOMMENDED READING**

1. *Neurology*. Shotekov. 2015. Sofia. Arco
2. *General Neurology*. Popova, M. Pleven, 2002
3. *Basic Neurology*. Gilroy, J. McGraw-Hill. 2000
4. *Color atlas of neurology*. Rohkamm R. Thieme, 2004
5. *Clinical Neurology*. Aminoff MJ, Greenberg DA, Simon RP. Lange  
Medical Books/ McGraw-Hill
6. *Adams&Victor's Principles of Neurology*. 9th edition