DESCRIPTION OF COURSE UNIT FOR DOCTORAL STUDIES AT VILNIUS UNIVERSITY

Scientific Area/eas, Field/ds of Science	Medical and Health Sciences (M 000): Medicine (M 001)			
Faculty, Institute, Department/Clinic	Faculty of Medicine Institute of Clinical Medicine Clinic of Neurology and Neurosurgery			
Course unit title (ECTS credits, hours)	**Diseases of Peripheral Nervous System and Neuromuscular Disorders** (7 credits, 189 hours)			
Study method	**Lectures**	**Seminars**	**Consultations**	**Self-study**
Number of ECTS credits	**-**	**-**	1	6
Method of the assessment (in 10 point system)	Examination. Assessed orally, five questions are asked.			

PURPOSE OF THE COURSE UNIT

To provide the doctoral student with knowledge about diseases of peripheral nervous system (PNS) and neuromuscular disorders, diagnostics and treatment methods, practical skills of examining a patient with diseases of peripheral nervous system and neuromuscular disorders.

THE MAIN TOPICS OF COURSE UNIT

Introduction

Classification of disease of PNS and neuromuscular disorders. Anatomy of PNS: roots, plexuses, peripheral nerves. The structure and functioning of the neuromuscular junction, types of impairment of neuromuscular transmission, the structure of muscles and its functioning, types of damage. The physiology of nerve conduction and pathological changes. The concept of motor unit. The examination of patients with disorders of PNS and neuromuscular diseases.

Electoneuromyography

Nerve conduction studies, electromyography, neuromuscular transmission tests. Diagnostic value of electroneuromyograhy in evaluation of disorders of PNS and neuromuscular diseases, techniques and interpretation of the tests, normal and pathologic findings. Nerve conduction studies – techniques and the interpretation of the tests that examine nerve conduction and generation of sensory and motor nerve impulses. Axonal degeneration and demyelination, focal and diffuse nerve damage. Electromyography – myopathic and neurogenic changes. Repetitive nerve stimulation, presynaptic and postsynaptic impairment of neuromuscular transmission. Electrophysiological evidences of mononeuropathies, polyneuropathies (axonal and demyelinating, acute and chronic), motorneuron diseases, myopathies.

Polyneuropathies

Epidemiology, signs and symptoms, classification, differential diagnosis, diagnostic criteria, treatment, prognosis. Acute (Guillain-Barre syndrome) and chronic demyelinating polyneuropathy. Charcot-Marie-Tooth disease: hereditary motor and sensory neuropathy, types, genetic counseling. Chronic aquired polyneuropathies: diabetic, alcoholic, toxic, metabolic, inflammatory. Classification of diabetic polyneuropathy, patogenesis, diagnostic criteria, patogenetic and symptomatic treatment, prognosis. Alcoholic polyneuropathy, classification, patogenesis, diagnostic criteria, patogenetic and symptomatic treatment. Polyneuropathies,

associated with cancer: chemotheraphy induced, paraneoplastic polyneuropathies. Polyneuropathies because of nutritional deficiencies. Critical illness polyneuropathy – diagnostic criteria, differential diagnosis, ENMG investigation, treatment, prophylaxis, prognosis.

Plexopathies

Epidemiology, symptoms, classification, differential diagnosis, diagnostic criteria, paraclinical investigations, treatment, prognosis. Parsonage-Turner syndrome.

Mononeuropathies and tunnel syndromes

The most common tunnel syndromes (carpal, cubital) - epidemiology, signs and symptoms, classification, differential diagnosis, diagnostic criteria, paraclinical investigations, treatment, prognosis. Indications for surgical treatment. Rarer tunnel syndrome and compression neuropathies (parasthetic meralgia, thoracic outlet syndrome, peroneal compression neuropathy). Cranial (facial, trigeminal) neuropathies: epidemiology, causes, diagnostic criteria, treatment, prognosis.

Diseases of neuromuscular junction

Myasthenia gravis: epidemiology, symptoms, classification, differential diagnosis, diagnostic criteria, paraclinical investigations, treatment, prognosis. Myasthenia gravis and pregnancy. Acetylcholine esterase inhibitors, immunomodulating treatment. The role of thymus, indications for thymectomia. Myasthenic crisis, treatment – intravenous immunoglobulins, plasma exchanges, ventilatory support. Lambert-Eaton myasthenic syndrome, clinical and electrophysiological differences from myasthenia gravis. Rare causes of impaired neuromuscular transmission – toxins, medications.

Motor neuron diseases

Epidemiology, classification. Lateral amyotrophic sclerosis: epidemiology, signs and symptoms, classification, differential diagnosis, diagnostic criteria, paraclinical investigations, treatment, prognosis. Problems of ventilatory support. Ethical problems management of patient with ALS. Related syndromes of motor neuron disorders. Spinal muscular atrophy: epidemiology, symptoms, classification, differential diagnosis, diagnostic criteria, paraclinical investigations, treatment, prognosis. Postpolio syndrome: epidemiology, symptoms, classification, differential diagnosis, diagnostic criteria, paraclinical investigations, treatment, prognosis

Muscle diseases

Muscle dystrophies: epidemiology, classification, symptoms, differential diagnosis, diagnostic criteria, paraclinical investigations, treatment, prognosis. Muscle biopsy. The role of genetic counseling. Most common types of muscle dystrophies (Duchenne, Becker, facioscapulohumeral, limb-girdle). Cardiac involvement. Myotonic disorders (Thomsen myotonia, myotonic muscular dystrophy): epidemiology, symptoms, classification, differential diagnosis, diagnostic criteria, paraclinical investigations, treatment, prognosisparaclinical investigations, treatment, prognosis. Mitochondrial myopathies: epidemiology, signs and symptoms, classification, differential diagnosis, diagnostic criteria, paraclinical investigations, treatment, prognosis. Metabolic and storage diseases with myopathy. Periodic paralyses: hypokalemic, hyperkalemic, normokalemic: epidemiology, symptoms, differential diagnosis, diagnostic criteria, paraclinical investigations, treatment, prognosis.

RECOMMENDED LITERATURE SOURCES

1. Klinikinė neurologija. Red. V.Budrys. 2-as leid. Vilnius, Vaistų žinios, 2009.
2. A.Ropper, M.Samuels, J.Klein, S.Prasad. Adams and Victor's Principles of Neurology. McGraw-Hill. 11th ed., 2019.
3. Urgentinė neurologija. Red. V. Budrys.Vilnius, Vaistų žinios, 2011.

4. Peripheral Neuropathy. Continuum. Lifelong learning in neurology. Miller AE, ed. 2012, Vol. 18, No 1.
5. Gries FA, Cameron NE, Low PA, Ziegler D. Textbook of diabetic neuropathy. Stuttgart: Thieme, 2003.
6. Addington J, Freimer M .Chemotherapy-induced peripheral neuropathy: an update on the current understanding. F1000Res. 2016 Jun 22;5. doi: 10.12688/f1000research.8053.1. eCollection 2016.
7. Said G. Peripheral Neuropathy & Neuropathic Pain: Into the Light. - 1rst ed. - Malta: Guttenberg Press Ltd., 2015.
8. Textbook of periheral neuropathy/ed. Donoforio PD. -1rst ed.- Bradfort&Bigelow, Demos Medical Pub. LLC, 2012.
9. A Look into Myasthenia Gravis/ ed. Pruitt JA. InTech, 2012 . doi: 10.5772/124
10. Emery AE. Muscular Dystrophy: The Facts. Oxford University Press, 2008.
11. Kinsley L, Siddique T. Amyotrophic Lateral Sclerosis Overview. In GeneReviews/ Pagon R, editor-in-chief. Last Revision: February 12, 2015.
12. Muscle disease. Pathology and genetics/ ed. Goebel HH, Sewry CA, Weller RO. -2nd ed. Willey- Blackwell, 2013.
13. European Federation of Neurological Societies/Peripheral Nerve Society Guideline on management of chronic inflammatory demyelinating polyradiculoneuropathy: Report of a joint task force of the European Federation of Neurological Societies and the Peripheral Nerve Society – First revision. European Journal of Neurology 2010, 17: 356–363.doi:10.1111/j.1468-1331.2009.02930.x

CONSULTING LECTURERS

1. Coordinating lecturer: Aušra Klimašauskienė (Assist. Prof. Dr.).
2. Gintaras Ferdinandas Kaubrys (Prof. Dr.).

APPROVED:

By Council of Doctoral School of Medicine and Health Sciences at Vilnius University: 29th of September 2022

Chairperson of the Board: Prof. Janina Tutkuvienė