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 Chest Diseases, Immunology, and Allergology			
Course unit title (ECTS credits, hours)	**Interstitial and Rare Lung Diseases** 9 credits (240 hours)			
Study method	**Lectures**	**Seminars**	**Consultations**	**Self-study**
Number of ECTS credits	-	-	2	7
Method of the assessment (in 10 point system)	The study of the subject is completed with an exam. The exam is written. It consists of 5 questions. The value of one question is up to 2 points (inclusive). Exam duration - 1 hour. 15 min. The minimum pass score is 5.			

PURPOSE OF THE COURSE UNIT

To familiarize the doctoral student with the clinical, radiological, and laboratory manifestations of interstitial and rare lung diseases. To provide knowledge about the origin, causes, risk factors, pathogenesis, histological manifestations, and biological properties, pathological physiology, modern research methods of interstitial and rare lung diseases. To help how to learn to diagnose, treat and prevent these diseases.

THE MAIN TOPICS OF COURSE UNIT

General part. Epidemiology of interstitial lung disease (ILD). Nature of lung injury in IPL. Alveolitis: a) lymphocytic, b) neutrophilic, c) eosinophilic, d) mixed. Granulomatous pneumonitis (alveolitis). Immune granuloma of epithelioid and giant cells: a) without necrosis, b) with necrosis; peculiarities of granuloma formation; causes of granulomatous pneumonitis. Lung fibrosis: a) mechanism of formation, b) causes of pneumofibrosis. Usual interstitial pneumonia. Nonspecific interstitial pneumonia. Organizing pneumonia.

Radiological methods for the diagnosis of ILD: a) radiography, b) computed tomography (CT): the most important findings. Typical radiological changes in the most common ILD in CT images are: a) multiple nodules – perilymphatic, centrilobular, and random distributions, b) multiple opacities, c) ground glass opacities, d) reticular changes, e) crazy paving opacities, f) multiple thin-walled cysts.

Bronchological methods of diagnosis of ILD: a) bronchoalveolar lavage (BAL), b) bronchoscopic lung biopsy (forceps, cryo-), c) thoracoscopic and open lung biopsy. BAL fluid changes in the most common ILD. Bronchoscopic lung biopsy: changes in obtained material, diagnostic value.

Impaired lung function. Investigation of ventilatory lung function and gas diffusion. The value of laboratory blood testing for the diagnosis of interstitial lung disease. Diagnostic algorithm.

The most common IPL: a) sarcoidosis, b) idiopathic interstitial pneumonia, c) hypersensitivity pneumonitis, d) eosinophilic pneumonia, e) lung involvement in connective tissue disease, g) pulmonary vasculitis, h) amiodarone-induced pulmonary damage. **Rare lung diseases:** a) lymphangiomatosis, b) pulmonary alveolar proteinosis, c) Langerhans cell histiocytosis, d) interstitial pneumonia with autoimmune features, e) cystic fibrosis.

Pulmonary sarcoidosis. Definition, prevalence, risk factors. Histological changes, pathological physiology. How to suspect. Clinical signs. Radiological signs. Diagnostic

criteria, differential diagnosis. Formulation of the diagnosis. Assessment of the patient's condition. Treatment. Disease course and prognosis. Monitoring.
Idiopathic pulmonary fibrosis. Definition, prevalence, risk factors. Histological changes, pathological physiology. How to suspect. Clinical signs. Radiological signs. Diagnostic criteria, differential diagnosis. Formulation of the diagnosis. Assessment of the patient's condition. Treatment. Disease course and prognosis. Monitoring.
Nonspecific interstitial pneumonia. Definition, prevalence, risk factors. Histological changes, pathological physiology. How to suspect. Clinical signs. Radiological signs. Diagnostic criteria, differential diagnosis. Formulation of the diagnosis. Assessment of the patient's condition. Treatment. Disease course and prognosis. Monitoring.
Organizing pneumonia. Definition, prevalence, risk factors. Histological changes, pathological physiology. How to suspect. Clinical signs. Radiological signs. Diagnostic criteria, differential diagnosis. Formulation of the diagnosis. Assessment of the patient's condition. Treatment. Disease course and prognosis. Monitoring.
Hypersensitive pneumonitis (exogenous allergic alveolitis). Definition, prevalence, risk factors. Histological changes, pathological physiology. How to suspect. Clinical signs. Radiological signs. Diagnostic criteria, differential diagnosis. Formulation of the diagnosis. Assessment of the patient's condition. Treatment. Disease course and prognosis. Monitoring.
Eosinophilic pneumonia. Definition, prevalence, risk factors. Histological changes, pathological physiology. How to suspect. Clinical signs. Radiological signs. Diagnostic criteria, differential diagnosis. Formulation of the diagnosis. Assessment of the patient's condition. Treatment. Disease course and prognosis. Monitoring.
Lung injury in connective tissue disease (CTD). Types of lung injury in CTD. Principles of diagnosis and treatment.
Pulmonary vasculitis. Types of lung damage. Diffuse bleeding into the alveoli. Principles of diagnosis and treatment.
Cystic fibrosis. Definition, prevalence, risk factors. Histological changes, pathological physiology. How to suspect. Clinical signs. Radiological signs. Diagnostic criteria, differential diagnosis. Formulation of the diagnosis. Assessment of the patient's condition. Treatment. Disease course and prognosis. Monitoring.

RECOMMENDED LITERATURE SOURCES

1. Aleksonienė R, Besusparis J, Gruslys V, Jurgauskienė L, Laurinavičienė A, Laurinavičius A, Malickaitė R, Norkūnienė J, Zablockis R, Žurauskas E, Danila E. $CD31^+$, $CD38^+$, $CD44^+$, and $CD103^+$ lymphocytes in peripheral blood, bronchoalveolar lavage fluid and lung biopsy tissue in sarcoid patients and controls. J Thorac Dis 2021; 13: 2300–2318.
2. Aleksonienė R, Zeleckienė I, Matačiūnas M, Puronaitė R, Jurgauskienė L, Malickaitė R, Strumilienė E, Gruslys V, Zablockis R, Danila E. Relationship between radiologic patterns, pulmonary function values and BALF cells in newly diagnosed sarcoidosis. J Thorac Dis 2017; 9: 88–95.
3. Broaddus VC, Mason RJ, Ernst JD, King TE, Lazarus SC et al. Murray and Nadel's textbook of respiratory medicine, 6th ed. Elsevier, Inc., 2016.
4. Weinberger SE, Cockrill BA, Mandel J. Principles of pulmonary medicine, 7th ed. Elsevier, 2019.
5. Landsberg JW. Manual for pulmonary and critical care medicine. Elsevier. 2018.
6. West JB, Luks AM. Respiratory physiology. The Essentials. 9th ed. Wolters Kluwer, 2017.
7. Aquilina G, Caltabiano DC, Galioto F, Cancemi G, Pino F et al. Cystic interstitial lung diseases: a pictorial review and a practical guide for the radiologist. Diagnostics (Basel) 2020; 10: 346.
8. Wuyts WA, Cottin V, Spagnolo P et al., eds. Pulmonary Manifestations of Systemic Diseases (ERS Monograph). 2019.

CONSULTING LECTURERS

1. Coordinating lecturer: Edvardas Danila (Prof. Dr. HP).
2. Rolandas Zablockis (Assoc. Prof. Dr.).
3. Vygantas Gruslys (Assoc. 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