

MINISTRY OF HEALTH OF UKRAINE
ODESSA NATIONAL MEDICAL UNIVERSITY

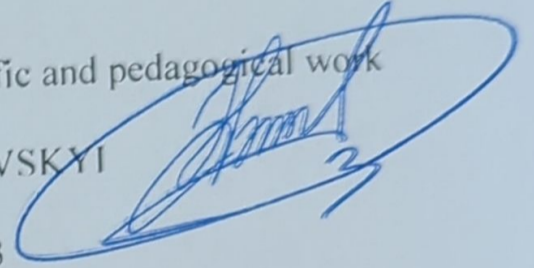
Medical Faculty #1

Department of internal medicine No.2

APPROVED
Vice-rector for scientific and pedagogical work

Eduard BURIACHKIVSKYY

01 of September, 2023



**METHODOLOGICAL GUIDELINES
TO PRACTICAL LESSONS
OF THE ELECTIVE COMPONENT**

Faculty of Medicine, **5th year**

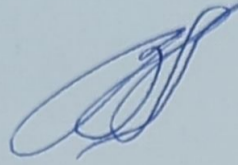
Educational discipline **CLINICAL IMMUNOLOGY AND ALLERGOLOGY**

Approved:

Meeting of the Department of internal medicine No.2
Odessa National Medical University

Protocol No. 1 dated August 28, 2023.

Head of the Department
Vasil SHTANKO



Developers:

Professor Serhii HONCHARUK
Assistant Viktoriia OSINTSEVA

PRACTICAL LESSONS

Content section 1. The structure of the immune system and the principles of the functioning of the immune system

Practical lesson No. 1

TOPIC #1. Structure of the immune system and principles of functioning. Cellular immunity.

Purpose: To study the general structure and basic principles of functioning of the immune system.

Basic concepts: organs of the immune system, factors of the nonspecific immune response, factors of the adaptive immune response, cellular factors of the immune system

Equipment: Multimedia projector, laptop, multimedia presentations, situational tasks

Plan:

I. Organizational measures (greetings, checking of present students, announcement of the topic, purpose of the lesson).

The motivation of higher education applicant to study the topic: The relevance of the topic is related to the need for doctors to know the structure of the immune system, the structure and differences of the innate and adaptive immune response, the list and functions of cellular factors of the immune system.

II. Control of the reference level of knowledge (survey of applicants, interview on the subject of the lesson).

2.1. Requirements for the theoretical readiness of applicants to perform a practical lesson.

The applicant should know:

- organs of the immune system
- factors of non-specific immune protection
- list and functional significance of cells of the immune system

2.2. Questions to check basic knowledge on the topic of the practical lesson:

1. Central and peripheral organs of the immune system.
2. Factors of innate immunity: cellular and humoral.
3. Specific immunity, its features, stages of formation and cooperation of immunocompetent cells that participate in the formation of an immune response.
4. Populations (T- and B-lymphocytes) and subpopulations (T-helper types 1 and 2, T-regulatory, T-CTL) of lymphocytes, stages of their maturation and differentiation, their function.
5. The main histocompatibility complex: structure, properties, function.

III. Questions (test tasks) to check basic knowledge on the topic of the practical lesson :
not provided

IV . Discussion of theoretical issues :

The discussion of theoretical issues takes place in the form of answers to questions, discussions, demonstration by the teacher of illustrative material (diagrams, drawings, photos) using a multimedia projector, teacher answers to applicant's questions

V. Topics of reports/abstracts: not provided

VI . Summing up lessons: notification of received grades, assignment of homework.

VII . List of recommended literature :

Main:

1. Roitt's Essential Immunology /Peter J. Delves, Seamus J. Martin, Dennis R. Burton, Ivan M. Roitt. – 12th ed. //Wiley-Blackwell, 2011. – 560 p.
2. Basic immunology : functions and disorders of the immune system / Abul K. Abbas, Andrew H. Lichtman, Shiv Pillai ; Illustrations by David L. Baker, Alexandra Baker. -- Fifth edition. 318 p. ; cm. Includes bibliographical references and index.
3. Immunology: Understanding the Immune System /Klaus D. Elgert. – 2nd ed. // Wiley-Blackwell, 2009. – 726 p.
4. Bazhora Y.I., Honcharuk S.F. Clinical immunology and allergology. Study guide: ed. 4th, // Odesa: Press - courier, 2018. - 264 p.

Additional

1. EAACI European Academy of Allergy and Clinical Immunology White Paper on Research, Innovation and Quality Care. Published by the European Academy of Allergy and Clinical Immunology 20 22
2. 5th Edition of Clinical Immunology: Principles and Practice / Robert R. Rich. Elsevier - 2019. C. - 1323.
3. Rich, Robert et al. Clinical Immunology E-Book. 5th ed. Elsevier Health Sciences, 2018. Web. 15 Oct. 2022.

Electronic information resources

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Practical lesson No. 2

TOPIC #2. Humoral immunity. Assessment of immune status.

Purpose: To study the functional significance of factors of humoral immunity, the main methods of researching the state of the immune system, the significance of changes in the main indicators of the immunogram

Basic concepts: composition and functional significance of indicators of humoral immunity, clinical and laboratory methods of assessing the state of the immune system, immune response during the inflammatory process.

Equipment: Multimedia projector, laptop, multimedia presentations, situational tasks

Plan:

I. Organizational measures (greetings, checking of those present, announcement of the topic, purpose of the lesson).

The motivation of higher education applicants to study the topic: The relevance of the topic is related to the need for doctors to know indicators of the humoral immune system, methods of assessing immune status, the ability to interpret changes in the main indicators of the immunogram

II. Control of the reference level of knowledge (survey of applicants, interview on the subject of the lesson).

2.1. Requirements for the theoretical readiness of applicants to perform a practical lesson.

The applicant should know:

- humoral factors of the immune system
- methods of assessing immune status
- changes in the leukogram and immunogram during the inflammatory process

2.2. Questions to check basic knowledge on the topic of the practical lesson:

1. Immunoglobulins, structure, functions. Thymus-dependent and thymus-independent mechanisms of antibody synthesis.
2. Structure and properties of circulating immune complexes.
3. Humoral innate protection factors.
4. Features of the immunological history.
5. Clinical methods of evaluating the immune system.
6. Laboratory methods for evaluating the immune system.
7. A comprehensive approach to the assessment of a person's immune status.
8. Immunogram, interpretation of results. Possibilities and limitations of immunological methods in the clinic.
9. Immune response in acute inflammatory process. Dynamics of indicators of leukogram and immunogram in acute, recurrent and chronic inflammation.

III. Questions (test tasks) to check basic knowledge on the topic of the practical lesson:
not provided

IV. Discussion of theoretical issues:

The discussion of theoretical questions takes place in the form of answers to questions, discussions, demonstration by the teacher of illustrative material (diagrams, drawings, photos) using a multimedia projector, teacher answers to applicant's questions, solving situational problems

V. Topics of reports/abstracts: not provided

VI. Summing up lessons: notification of received grades, assignment of homework.

VII. List of recommended literature:

Main:

1. Roitt's Essential Immunology /Peter J. Delves, Seamus J. Martin, Dennis R. Burton, Ivan M. Roitt. – 12th ed. //Wiley-Blackwell, 2011. – 560 p.
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Practical lesson No. 3

TOPIC #3. Diseases of the immune system. Immunodeficiency diseases.

Purpose: To study the classification of immunodeficiencies, their clinical and laboratory signs.

Basic concepts: born and acquired immunodeficiency diseases, clinical signs of immunodeficiency diseases, laboratory indicators of immunodeficiency

Equipment: Multimedia projector, laptop, multimedia presentations, situational tasks

Plan:

I. Organizational measures (greetings, checking of those present, announcement of the topic, purpose of the lesson).

The motivation of higher education applicants to study the topic: The relevance of the topic is related to the need for doctors to know the clinical and laboratory signs of immunodeficiency diseases

II. Control of the reference level of knowledge (survey of applicants, interview on the subject of the lesson).

2.1. Requirements for the theoretical readiness of applicant to perform a practical lesson.

The applicant should know:

- clinical symptoms of immunodeficiency states
- laboratory signs of immunodeficiency
- causes of secondary immunodeficiencies

2.2. Questions to check basic knowledge on the topic of the practical lesson:

1. Congenital immunodeficiency diseases: definition, classification, mechanisms of development.
2. Clinical signs, immunodiagnostics, doctor's tactics, approaches to treatment: combined, T - and B - dependent immunodeficiencies caused by a violation of the phagocytic link of immunity and a deficiency of complement proteins.
3. Acquired immunodeficiency diseases: definition, causes, mechanisms of development, classification, diagnosis.
4. The role of acquired immunodeficiency diseases in the pathogenesis of various diseases. Early detection of secondary immunological deficiency in the body.
5. Basic approaches to the treatment and prevention of secondary immunological insufficiency, taking into account clinical manifestations and features of the course.
6. Formation mechanisms and features of the immune response in specific bacterial (tuberculosis) and viral (AIDS, herpes) fungal (actinomycosis) infections.
7. Mechanisms of pathogen avoidance from the action of immune protection factors.

III. Questions (test tasks) to check basic knowledge on the topic of the practical lesson:
not provided

IV . Discussion of theoretical issues :

The discussion of theoretical questions takes place in the form of answers to questions, discussions, demonstration by the teacher of illustrative material (diagrams, drawings, photos) using a multimedia projector, teacher answers to applicant's questions, solving situational problems

V. Topics of reports/abstracts: not provided

VI. Summing up lessons: notification of received grades, assignment of homework.

VII. List of recommended literature:

Main:

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Content section 2. Allergic diseases.

Practical lesson No. 4

TOPIC #4. Allergic (atopic) diseases.

Purpose: To study the etiology, pathogenesis, principles of diagnosis and treatment of allergic (atopic) diseases

Basic concepts: concepts of atopy and allergy, main stages of allergic reactions, methods of allergy examination, molecular allergology, elimination measures for allergic diseases, antiallergic drugs, specific immunotherapy with allergens

Equipment: Multimedia projector, laptop, multimedia presentations, situational tasks

Plan:

I. Organizational measures (greetings, checking of those present, announcement of the topic, purpose of the lesson).

The motivation of higher education applicants to study the topic: The relevance of the topic is related to the need for doctors to know the etiology, pathogenesis, principles of diagnosis and treatment of allergic (atopic) diseases

II. Control of the reference level of knowledge (survey of applicants, interview on the subject of the lesson).

2.1. Requirements for the theoretical readiness of students to perform a practical lesson.

The applicant should know:

- the difference between the terms atopy and allergy
- pathogenesis of allergic (atopic) diseases
- methods of diagnosis, treatment and prevention of allergic (atopic) diseases

2.2. Questions to check basic knowledge on the topic of the practical lesson:

1. The role of genetic factors and the environment in the immunopathogenesis of allergies.
2. Modern ideas about allergy and atopy.
3. The main stages of immunological reactions.
4. Allergological examination methods (allergological history, physical examinations, skin tests)
5. Modern aspects of allergy diagnosis. Screening methods in allergy assessment.
6. Elimination and provocative tests in allergology.
7. Molecular allergology.
8. Principles of treatment of allergic diseases.
9. Allergen-specific immunotherapy, indications and contraindications.
10. Features of the immunopathogenesis of bronchial asthma, pollinosis, allergic rhinitis, urticaria, etc.

III. Questions (test tasks) to check basic knowledge on the topic of the practical lesson:
not provided

IV. Discussion of theoretical issues:

The discussion of theoretical questions takes place in the form of answers to questions, discussions, demonstration by the teacher of illustrative material (diagrams, drawings, photos) using a multimedia projector, teacher answers to applicant's questions, solving situational problems

V. Topics of reports/abstracts: not provided

VI. Summing up lessons: notification of received grades, assignment of homework.

VII. List of recommended literature :

1. Roitt's Essential Immunology /Peter J. Delves, Seamus J. Martin, Dennis R. Burton, Ivan

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5. Global Atlas of ALLERGY. Published by the European Academy of Allergy and Clinical Immunology 2014.
GLOBAL ATLAS OF SKIN ALLERGY. Published by the European Academy of Allergy and Clinical Immunology 2019.

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Practical lesson No. 5

Topic #5. Allergic (non-atopic) diseases.

Purpose: To study the classification of allergic (non-atopic) diseases, their etiology, features of pathogenesis, principles of diagnosis and treatment.

Basic concepts: allergic (non-atopic) diseases, classifications of hypersensitivity reactions, mechanisms of autoimmune reactions.

Equipment: Multimedia projector, laptop, multimedia presentations, situational tasks

Plan:

I. Organizational measures (greetings, checking of those present, announcement of the topic, purpose of the lesson).

The motivation of higher education applicants to study the topic: The relevance of the topic is related to the need for doctors to know the classification and mechanisms of hypersensitivity reactions, the pathogenesis of autoimmune diseases

II. Control of the reference level of knowledge (survey of applicants, interview on the subject of the lesson).

2.1. Requirements for the theoretical readiness of applicants to perform a practical lesson.

The applicant should know:

- Classifications of hypersensitivity reaction (Gel and Coombs, modern)
- features of the pathogenesis of various types of allergic reactions (non-atopic) diseases

2.2. Questions to check basic knowledge on the topic of the practical lesson:

1. Classification of hypersensitivity reactions according to Gel and Coombs.
2. Modern classification of hypersensitivity reaction
3. The main mechanisms of the occurrence and development of immunopathological conditions, their role in the development of various diseases.
4. Mechanisms of development of humoral cytotoxic reactions.
5. Mechanisms of reaction development of immune complex formation.
6. Mechanisms of development of pathological immune reactions mediated by T-sensitized lymphocytes.
7. Mechanisms of autosensitization caused by antibodies.

III. Questions (test tasks) to check basic knowledge on the topic of the practical lesson:
not provided

IV. Discussion of theoretical issues:

The discussion of theoretical issues takes place in the form of answers to questions, discussions, demonstration by the teacher of illustrative material (diagrams, drawings, photos) using a multimedia projector, teacher answers to applicant's questions

V. Topics of reports/abstracts: not provided

VI. Summing up lessons: notification of received grades, assignment of homework.

VII. List of recommended literature:

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