

LECTURE COMPLEX

Discipline: ""Musculoskeletal System and Skin in Pathology""

Course code: MSSP 3308

Title and code of the OP: 6B10115 "Medicine"

Amount of study hours/credits: 30 hours/1 credits

Course and semester of study: 3rd year/ 6th semester

Lecture length: 2

Shymkent, 2025

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Department of "Propaedeutics of Internal Diseases"		
Lecture complex on the subject "Musculoskeletal System and Skin in Pathology"		
		47 / 11-2025
		2p. from 12

The lecture complex was developed in accordance with the working curriculum of the discipline (syllabus) and discussed at a department meeting.

Protocol: № 11 «26» 06, 2025y.

Head of department, d.m.s., professor Bekmurzaeva E.K. Berg

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Department of "Propaedeutics of Internal Diseases"		47 / 11-2025
Lecture complex on the subject "Musculoskeletal System and Skin in Pathology"		3p. from 12

Lecture №1

1. Topic:

Methods of examining patients with musculoskeletal system pathology.

Complaints, history-taking, general examination of patients with musculoskeletal diseases. Physical examination of patients with musculoskeletal diseases: inspection and palpation of small and large joints. **Diagnostic significance.**

2. Objective:

To train students in taking patient complaints, identifying causes, clinical features, and conducting physical examinations of patients with musculoskeletal diseases.

To teach students the methodology and technique of **palpation and percussion of small and large joints.**

3. Lecture Key Points:

Patient complaints with musculoskeletal diseases are diverse. The main ones include:

- Pain (may occur at rest or during movement, localized in the back, joints, or muscles)
- Stiffness in movement
- Muscle spasms
- Rapid fatigue
- Swelling and puffiness
- Localized increase in temperature and skin redness

Pain sensation:

Patients often complain of **joint pain and pain in surrounding tissues.**

- Pain can be **acute or chronic**, occurring both at rest and during movement.
- **In arthritis**, the synovial membrane becomes inflamed, leading to swelling, skin redness, and tenderness in the affected area. The **pain mechanism** is due to inflammation and irritation of nerve endings in the joint capsule.
- **In arthrosis**, there is degeneration of cartilage tissue, leading to thinning and increased friction between joint surfaces. This causes **mechanical pain**, especially under load. The pain is due to cartilage destruction and reactive inflammation in surrounding tissues.
- **Lower back pain** can be caused by both **spinal diseases** and **kidney pathology**. For example, in conditions like **lumbalgia**, the pain intensifies with movement and may be accompanied by **muscle spasm**. The mechanism is often due to **nerve root compression** or irritation of ligaments and muscles.

Important: It is essential to **differentiate musculoskeletal pain** from pain caused by internal organ diseases (e.g., kidneys) to prescribe appropriate treatment.

Stiffness of movement:

This is a sensation of difficulty or restriction when attempting to move a joint or group of joints.

It may be **temporary or persistent**, appearing at certain times of the day or after physical activity.

Types of stiffness:

- **Morning stiffness:** occurs after waking up and usually resolves within an hour. Common in inflammatory joint diseases (e.g., **rheumatoid arthritis**).
- **Stiffness after rest:** appears after prolonged inactivity (e.g., sitting or lying). Can be a sign of **osteoarthritis** or other degenerative joint diseases.
- **Constant stiffness:** lasts throughout the day and may indicate serious musculoskeletal disorders, including **ankylosing spondylitis (Bechterew's disease)**.

Mechanism of stiffness:

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Department of "Propaedeutics of Internal Diseases"		47 / 11-2025
Lecture complex on the subject "Musculoskeletal System and Skin in Pathology"		4p. from 12

- Most often caused by **inflammation** in joints and surrounding tissues, leading to swelling, pain, and restricted mobility.
- **Degenerative changes** in cartilage also contribute by reducing cushioning properties and increasing friction in joints.

Causes of stiffness:

- Inflammatory joint diseases: **rheumatoid arthritis, reactive arthritis**
- Degenerative diseases: **osteoarthritis, spondylosis**
- Systemic connective tissue diseases: **systemic lupus erythematosus, scleroderma**
- Joint injuries and overload: **dislocations, sprains, repeated microtraumas**

Numbness and tingling in the limbs:

Patients may feel decreased sensitivity, "pins and needles," or burning in the arms or legs. This is often associated with **nerve compression** due to spinal or joint pathologies.

Muscle weakness:

Reduced muscle strength may lead to difficulty performing daily activities (e.g., climbing stairs, holding objects).

This symptom often accompanies spinal and joint diseases.

Swelling and redness in joints:

The presence of **swelling**, puffiness, and skin color changes around the joint may indicate **inflammatory processes** (e.g., arthritis).

Joint crepitus (cracking or clicking sounds):

Some patients report audible phenomena (crackling, clicking) during movement.

This may indicate **degenerative joint changes** or **structural abnormalities**.

Medical history collection (Anamnesis):

Divided into two main parts:

- **Disease history** (anamnesis morbi)
- **Life history** (anamnesis vitae)

Disease history:

- **Onset and progression:** When symptoms started, how they evolved, periods of exacerbation and remission
- **Preceding factors:** Trauma, infections, physical overload, or other events
- **Symptom localization and character:** Which joints or areas are affected, nature of the pain or discomfort, presence of swelling, redness, or motion limitation
- **Impact on daily activities:** How the disease affects daily functions, work, hobbies

Life history:

- **Previous diseases:** Chronic infections, autoimmune disorders (risk factors for musculoskeletal pathology)
- **Lifestyle and occupational risks:** Physical activity level, type of work (sedentary, standing, heavy lifting), bad habits
- **Family history:** Musculoskeletal diseases in close relatives may suggest hereditary predisposition
- **Medication history:** Long-term use of certain drugs can affect the musculoskeletal system

Physical examination of patients with musculoskeletal diseases includes key methods aimed at assessing the condition of the musculoskeletal system and identifying pathological changes.

Key components:

- **Inspection:** Evaluate posture, body symmetry, limb position, presence of swelling, redness, joint deformities, and muscle atrophy

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Department of "Propaedeutics of Internal Diseases"		47 / 11-2025
Lecture complex on the subject "Musculoskeletal System and Skin in Pathology"		5p. from 12

- **Palpation:** Pressing specific areas to assess tenderness, skin temperature, swelling, muscle tension, and other tissue changes
- **Range of motion assessment:** Joint mobility, restrictions, or pain during movement
- **Neurological examination:** Check nervous system function (sensitivity, reflexes, muscle strength) — useful for detecting neurologic impairments related to musculoskeletal disease
- **Special functional tests:** Evaluate joint stability, ligament condition, and other structures
 - E.g., tests for **anterior cruciate ligament (ACL)** damage in the knee

4. Illustrative materials:

Presentation slides

5. Literature:

Aitmbet B.11 – "Propaedeutics of Internal Diseases", Almaty: Evero, 2018 – 568 pages

6. Control questions (for feedback):

1. What are the main complaints in patients with musculoskeletal diseases, and how do they assist in diagnosis?
2. How to correctly collect history from a patient with musculoskeletal pathology?
3. What are the key stages of a general examination of a musculoskeletal patient, and what should be paid special attention to?
4. What is the methodology and technique of joint examination in musculoskeletal pathologies?
5. What signs and symptoms are diagnostically significant in musculoskeletal diseases, and what do they indicate?

Lecture №2

1. Topic:

Key clinical syndromes in rheumatology (arthritis and arthrosis). Diagnostic significance. Principles of questioning, collecting complaints, medical history, and objective examination methods for patients with key clinical musculoskeletal syndromes (arthritis and arthrosis).

2. Objective:

Based on the integration of fundamental and clinical disciplines, to teach students the basics of **clinical examination of the musculoskeletal system in both normal and pathological states**, and to diagnose pathological syndromes during physical, laboratory, and instrumental examination of the patient.

3. Key Lecture Points:

Arthrosis (Osteoarthritis)

A **dystrophic joint disease** associated with slow degeneration and destruction of intra-articular cartilage.

Over time, **remodeling of the articular surfaces**, inflammation, and degeneration of periarticular tissues occur.

The term "**arthrosis**" (**deforming osteoarthritis**) includes a group of degenerative-inflammatory joint diseases of various origins but with similar mechanisms.

Causes:

- **Primary arthrosis** develops due to age-related and/or biomechanical changes.
- **Secondary arthrosis** occurs after trauma, in the context of diabetes, thyroid diseases, vascular disorders, etc.
- Contributing factors:
 - **Flatfoot**, which impairs the shock-absorbing function of the foot, can lead to damage of the lower limb joints and development of arthrosis.

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Department of "Propaedeutics of Internal Diseases"		47 / 11-2025
Lecture complex on the subject "Musculoskeletal System and Skin in Pathology"		6p. from 12

- **Timely use of customized orthopedic insoles** can help correct foot deformity and reduce joint load.

Prevalence and Significance:

- Arthrosis is the **most common joint disease**, with frequency increasing with age.
- However, it **also occurs in younger individuals**, making it a condition of **significant social relevance**.

Symptoms of Arthrosis:

- Pain during physical activity, which **subsides at rest**
- **Limited range of motion** and joint **crepitus (cracking)**
- Muscle tension around the joint
- Occasional **swelling** and **gradual joint deformity**

Types:

- **Primary arthrosis:** 40–50% of cases.
 - Develops in previously healthy joints, usually due to **physical overuse** (e.g., heavy labor).
- **Secondary arthrosis:** 50–60% of cases.
 - Affected joints were **already damaged** (e.g., due to trauma) before disease onset.

Commonly Affected Joints:

- Most frequently: **Lower body joints** – hip, knee, and first metatarsophalangeal joint.
- In the **hands:** typically affects finger joints.
- Usually begins in **one joint**, and then may affect the **symmetrical joint**.

Arthritis

A **joint inflammation** that can lead to **tissue damage**, pain, and limited mobility.

Unlike arthrosis (which is degenerative), **arthritis is inflammatory** and can be **acute or chronic**.

May affect **one or multiple joints**, often with swelling, redness, and local temperature increase.

Causes:

- **Primary arthritis:** inflammation develops without obvious external causes.
- **Secondary arthritis:** inflammation occurs due to another condition.

Primary arthritis may be caused by:

- Infections
- Autoimmune disorders: e.g., **rheumatoid arthritis, psoriasis, gout**

Secondary arthritis may result from:

- Trauma
- Infections
- Other diseases: e.g., **osteomyelitis**, joint disorders

Other contributing factors:

- **Genetic predisposition**
- Lifestyle-related: heavy physical activity, poor diet, **obesity**, lack of exercise

Symptoms of Arthritis:

- Joint pain, **worse with activity**, improves at rest
- Swelling, redness, **local warmth**
- Restricted joint motion, **stiffness**, possible crepitus
- **Morning stiffness**, usually improving during the day
- In severe cases: joint **deformity** and **loss of function**

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Department of "Propaedeutics of Internal Diseases"		47 / 11-2025
Lecture complex on the subject "Musculoskeletal System and Skin in Pathology"		7p. from 12

Classification of Arthritis:

- **Acute arthritis:**
 - Often caused by **infections** or trauma
 - **Rapid symptom onset**, noticeable inflammation
- **Chronic arthritis:**
 - **Gradual onset**, symptoms may be milder
 - Can lead to **progressive joint damage**
- **Rheumatoid arthritis:**
 - An **autoimmune disease**
 - The immune system attacks joints, causing chronic inflammation and damage
- **Gouty arthritis:**
 - Caused by **uric acid crystal deposits** in joints
 - Leads to inflammation and **sudden, severe pain**

Affected Areas:

- Arthritis can develop in **healthy joints** or **on top of degenerative changes**
- Most commonly affects:
 - **Hands**
 - **Knees**
 - **Elbows**
 - **Hips**

4. Illustrative Materials:

Presentation (slides)

5. Literature:

Propaedeutics of Internal Diseases: Study Guide / T.S. Ryabova, E.S. Rys, V.Ya. Plotkin et al. – Saint Petersburg: SpetsLit, 2015. – 414 p.

6. Control Questions (for feedback):

1. **What key aspects should be considered when collecting medical history from a patient with arthritis or arthrosis?**
2. **How to properly question a patient about the nature of pain to distinguish between arthritis and arthrosis?**
3. **What additional complaints may accompany arthritis and arthrosis, and how do they aid diagnosis?**
4. **What objective examination methods (physical exams) are most important in diagnosing arthritis and arthrosis?**
5. **What is the significance of assessing joint range of motion and palpation in the diagnosis of arthritis and arthrosis?**

7. Учебные ресурсы	
Электронные ресурсы, включая, но не ограничиваясь ими: базы данных, анимации симуляторы, профессиональные блоги, веб-сайты, другие	«Пропедевтика внутренних болезней» Ivashkin, V. T. Internal diseases propedeutics [Электронный ресурс] :textbook. - Электрон. текстовые дан. (142Мб). - М. : ГЭОТАР - Медиа, 2017. - эл. опт. диск Ішкі аурулар./Бимурзаев Ғ.Н., Зарипова Ғ.К. , 2020 /https://aknurpress.kz/reader/web/2594 Ішкі аурулар пәнінен клиникалық тапсырмалар жинағы.

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Lecture complex on the subject "Musculoskeletal System and Skin in Pathology"		8p. from 12

электронные справочные материалы (например: видео, аудио, дайджесты)	Ержанова Г.А., Муханова А.К., 2016/ https://aknurpress.kz/reader/web/2370 Ішкі аурулар пропедевтикасынан жағдаяттық тапсырмалар Оразова Б.О., Марченко Т.В., 2016/ https://aknurpress.kz/reader/web/2348 Ахметов Қайырғали Жәлелұлы. Ішкі аурулар пропедевтикасы пәнінің клиникалық дәрістері. Алматы: «Эверо», 2020. – 262 бет https://elibr.kz/ru/search/read_book/22/ Внутренние неинфекционные заболевания с клинической рентгенологической оценкой КГУ им. А. Байтұрсынова, 2011. – 94 с. http://rmebrk.kz/book/1024356
Электронные учебники	«Пропедевтика внутренних болезней» Внутренние болезни. Т. 1 [Электронный ресурс]: учебник / под ред. В. С. Моисеева. - 3-е изд., испр. и доп. - Электрон. текстовые дан. (66.5Мб). - М.: ГЭОТАР - Медиа, 2015. – 960 Внутренние болезни. Т. 2 [Электронный ресурс]: учебник / под ред. В. С. Моисеева. - 3-е изд., испр. и доп. - Электрон. текстовые дан. (45.1Мб). - М.: ГЭОТАР - Медиа, 2015. -895 Пропедевтика внутренних болезней : Учебник. / Т.С. Рябова, Е.С. Рысс, В.Я. Плуткин и др.. - СПб.: СпецЛит, 2015. - 414 с. http://rmebrk.kz/book/1174389 Внутренние болезни в работе врача общей практики : Учебное пособие. / К.Ж. Садыкова, Ш.У. Скандерова, С.К. Саттеева. - Туркестан: Туран, 2017. - 96 с. http://rmebrk.kz/book/1167635 Пропедевтика внутренних болезней: Учебник. – 6-е изд., I - том перераб. и доп. – Алматы: Эверо, 2020. – 400 с. https://elibr.kz/ru/search/read_book/676/ Пропедевтика внутренних болезней: Учебник. – 6-е изд., II - том перераб. и доп. (Учеб. лит. Для студентов медицинских вузов). – Алматы: Эверо, 2020. – 212 с https://elibr.kz/ru/search/read_book/682 Пропедевтика внутренних болезней: Учебник. – 6-е изд., III - том перераб. и доп. (Учеб. лит. Для студентов медицинских вузов). – Алматы: Эверо, 2020. – 208 с. https://elibr.kz/ru/search/read_book/684/ Нұрсұлтанова С.Д., Бакирова Р.Е., Мамашалиева С.Б., Беков Е.К., Мадиева Л.С. Жүрек тамыр жүйесінің аурулары бар науқастарды тексеру әдісі және техникасы. Оқу-әдістемелік құрал. - Алматы, «Эверо» баспасы. - 2020. https://elibr.kz/ru/search/read_book/705/ Ішкі ағза ауруларының пропедевтикасы. Оқулық Айтмбет Б.11 - Алматы «Эверо» 2018ж, -568 бет. https://elibr.kz/ru/search/read_book/3086/ Стрюк, Раиса Ивановна. Внутренние болезни : в 3 ч. : Ч. 1 учебник / Р. И. Стрюк, И. В. Маев ; [Перв. Моск. гос. мед. ун-т

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Lecture complex on the subject "Musculoskeletal System and Skin in Pathology"		
47 / 11-2025		
9p. from12		

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Литература	«Пропедевтика внутренних болезней» Основная: Василенко, В. Х. Пропедевтика внутренних болезней. Т. 1. : Учебник / В. Х. Василенко, В. В. Василенко ; . - Алматы :Newbook, 2021. - 400. с. Василенко, В. Х. Пропедевтика внутренних болезней. Т. 2. : Учебник / В. Х. Василенко, В. В. Василенко ; . - Алматы :Newbook, 2021. - 212. с. Василенко, В. Х. Пропедевтика внутренних болезней. Т. 3. : Учебник / В. Х. Василенко, В. В. Василенко ; . - Алматы :Newbook, 2021. - 208. с. Мухин , Н. А. Ішкі аурулар пропедевтикасы: оқулық. - М. : ГЭОТАР - Медиа, 2015 Ахметов, Қ. Ж. Ішкі аурулар пропедевтикасы пәнінің клиникалық дәрістері [Мжітін] : оқу құралы / Қ. Ж. Ахметов. - Алматы : New book, 2022. - 266 с. Василенко, В. Х. Ішкі аурулар пропедевтикасы. Т. 1. :оқулық / мем. тілге ауд. К. Асқамбай. - Алматы :Эверо, 2015. - 336 б. с Василенко, В. Х. Ішкі аурулар пропедевтикасы. Т. 2 :оқулық / мем. тілге ауд. К. Асқамбай. - Алматы :Эверо, 2015. - 176 б. с Василенко, В. Х. Ішкі аурулар пропедевтикасы. Т. 3 :оқулық / мем. тілге ауд. К. Асқамбай. - Алматы :Эверо, 2015. - 192 б. с Айтбембет, Б. Н. Ішкі ағза ауруларының пропедевтикасы: оқулық Алматы : Эверо, 2014. - 568 бет.-

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Department of "Propaedeutics of Internal Diseases"		47 / 11-2025
Lecture complex on the subject "Musculoskeletal System and Skin in Pathology"		10p. from 12

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