

MINISTRY OF HEALTH OF UKRAINE

O.O. BOHOMOLETS NATIONAL MEDICAL UNIVERSITY

OSTEOCHONDROPATHY: LEG-CALVE-PERTHES DISEASE, OSGOOD-SHLATTERS
DISEASE, SCHEUERMANN-MAU DISEASE, KÖHLER I, II, KIENBOCK'S DISEASES

WORK BOOK

For independent work of students of 5th course

Study discipline "Traumatology and Orthopedics"

direction "Medicine"

specialty "Curative care"

Department of Traumatology and Orthopedics

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Introduction

One of the effective means of organizing an independent work of students on topics of disciplines assigned for independent study is the work of a student with his/her workbook. Work with the workbook should begin with the acquaintance with the key issues on the topic. The next step includes the acquaintance with the list of sources from which the student can find the answers to the posed questions. For more deep study of the problem students can visit professional websites.

Having become acquainted with the theory, the student needs to assess his/her degree of mastering the material. In this regard, he/she resolves the proposed tasks; answers test questions on the topic. Students should pay particular attention in preparing for classes to the required minimum of practical skills to be mastered. In the relevant sections of textbooks, manuals, he must glean the information that he needs for mastering further practical skills.

Arrangement of independent work with the use of workbook is conducted as follows: tutor provides the workbook to a student in digital format (to be downloaded from website of the Department), or in printed version; later the students do the tasks at their extra-curricular time, whereupon the tutor checks and assesses them **at the initial stage of practical classes**.

Criteria for assessing the tasks in the workbook

Each task requires a separate approach when assessing the quality of its implementation under particular criteria. And yet, with a 5-point evaluation ranking for each type of tasks, one should observe the general didactic criteria, namely:

“5” is graded when the student:

1. Executed the work w/o errors and deficiencies.
2. maximum one deficiency.

“4” is graded when the student executed the work in full but made:

1. maximum one gross error and one deficiency.
2. maximum two deficiencies.

“4” is graded when the student executed at least one half of a work correctly or made:

1. maximum two gross errors or one gross and one mild errors and one deficiency.
2. maximum two mild errors or one mild error and three deficiencies.
3. In the lack of errors but when four or five deficiencies are available.

"2" is graded when the student made:

1. number of errors (deficiencies) exceeding the limit when grade "3" could be applied.
2. In case less than half of work is completed.
3. Failed to start the work.

Osteochondropathy: Leg-Calve-Perthes disease, Osgood-Shlatters disease, Scheuermann-Mau disease, Köhler I, II, Kienbock's diseases

Learning objectives:

1. Identify the medical and social relevance of the pathological process.
2. Determine the factors that contribute to the development of these diseases.
3. Determine the genesis of osteochondropathies and determine their impact on the occurrence of the relationship for dystrophic-degenerative diseases of skeletal system.
4. Determine the clinical manifestations and the data of instrumental studies of osteochondropathies according to their localization.
5. Be able to make a differential diagnosis of diseases associated with various stages of the pathological process.
6. On the basis of the pathogenesis justify objectives and principles of treatment depending on the stage and localization of the pathological process.
7. Identify the indications for conservative and operative treatment.
8. To develop and validate, depending on the location and stage pathological process, an individual program of preventive measures.
9. Develop and justify, depending on the location and stage the pathological process, the recommendations of professional orientation.
10. Determine the mistakes in diagnosis and treatment.

The student should know:

1. The definition of "osteochondropathy".
2. Stages of the process.
3. Clinical manifestations depending on the location and stage of the pathological process.
4. Indications and informative survey of modern ways of research.
5. Differential diagnosis.

6. Indications and extent of conservative treatment.
7. Indications and extent of surgical treatment.
8. Causal relationships osteochondropathy and pathology of musculoskeletal system.
9. Principles of formation of preventive measures.
10. Principles of formation of a professional orientation, prevention. The negative effects of antibiotics.
11. Criteria for evaluating the effectiveness of therapeutic and preventive measures.

The student should be able to:

1. To analyze the clinical picture depending on osteochondropathies localization and stage of the pathological process.
2. Analyze the data results of instrumental methods of research.
3. Based on the results of clinical and instrumental examination provide an differential diagnosis.
4. To provide differential treatment of an individual approach.
5. Create a system of preventive measures and to determine the patient's professional orientation.
6. Apply external orthopedic immobilization instruments.
7. Para - and intra-articular blockades.
8. Joints puncture.

Key terms threads

Term	Definition
osteochondropathy	(From gr.- bone, χόνδρος - cartilage, πάθος- suffering) - aseptic necrosis os sponge bone, chronic and accompanied by microfractures. Osteochondropathy is a consequence of the local blood disorders, which arise as a result of a number of factors (congenital and acquired).
Leg-Calve-Perthes disease	Osteochondropathy femoral head
Köhler disease II	Osteochondropathy of II-III metatarsals caps
Köhler disease I	Osteochondropathy of navicular bone of the foot
Kienbock disease	Osteochondropathy of lunatum bone of wrist
Calve's disease	Osteochondropathy of vertebral body
Disease Shoerman Mau	Osteochondropathy apophyses of the vertebral bodies

Literature.

1. Batalov A.A. Early diagnosis and choice of treatment tactics at Perthes disease / Bulletin of traumatology and orthopedics. 1998.- №5.- S.43-47.
2. Goncharov, Illness Leg-Calve-Perthes disease (etiology, pathogenesis, treatment): Dis ... to Dr. Medical Sciences / Institute Traumatology and Orthopedics NAMS Ukrainy.- K.2001.
3. Kornilov N.V. Traumatology and ortopediya.- T3 // "Hippocrates' 2006.- 896 p.
4. V.I. Shevtsov, V.D. Makushin Osteochondropathy of hip Guide for vrachey.- .. M: Medicine, 2007.-352 with.
5. Problems of diagnosis and treatment tactics femur's head osteochondropathies : A Guide for Physicians, edited V.N.Konferovich. Ekaterinburg.-1998.-216 with.
6. Svintsov A.P. Differential diagnosis in children osteochondropathies and adolescents // Orthopedics, Traumatology and Prosthetics. 1980. №5.- S.43-49.

Tasks for independent work theme (to be answered in written)**Exercise 1.**

Patient K., 10 years old, complains of pain in the left hip joint during walking, fatigue, limping. He suffered from rickets. According to the parents of the child inactivity takes place from 6 years old, he came limping 1 year ago.

OBJECTIVE: hypotrophy of gluteal muscles, muscles of the thigh and shin. Flexion and extension of the hip joint within physiological norms determined restriction and soreness rotational motions.

On the left hip radiograph is determined by a decrease of the density of the femoral head and its mosaic structure, head shape of mushroom, joint space unchanged.

- 1. Clinical manifestations of the Leg-Calve-Perthes disease.**
- 2. Diferential diagnosis of this disease and tuberculosis coxitis.**
- 3. Conservative treatment of early stages of pathological processes.**

Task 2.

A patient 18 years old, appealed to a doctor with complaints of pain in the right hip, which increases during exercise, at the end of the day, limping. The pain occurred a year ago and had a periodic nature.

OBJECTIVE: hypotrophy of gluteal muscles, the relative shortening of the limbs, mild limitation of flexion and extension in the right hip. Determined limitations and pain of rotational motions, accompanied by a "crepitation" in the hip.

On the right hip joint is determined by the X-ray determined: flattening of the femoral head without changes in bone density, joint space narrowing. Cervico-diaphyseal angle is 120 degrees.

- 1. What disease is the case in this patient?**
- 2. Determine the stage of pathological process.**
- 3. Justify methods and scope of treatment depending on the stage of development of the pathological process.**

Task 3.

A patient 25 years old, hospitalized in the orthopedic and traumatology department with complaints of pain in his right knee that occurs when walking and increases with physical activity. The pain worried during the last 3 years. A characteristic feature is currently acute increasing of pain that is accompanied by the inability of movement in the knee.

Objectively: hypotrophy of the quadriceps femoris muscle, signs of chronic synovitis. Passive and active movement in the joint within the physiological norm.

On the right knee X-ray is determined the surface defect of the internal condyle of the femur.

- 1. Initial diagnosis and differential diagnosis.**
- 2. What further tests must be carried out to confirm the diagnosis?**
- 3. Clinical signs of synovitis of the knee.**

Task 4.

The patient 4 is years old, complains of pain in the upper third of the right tibia, which increases during a game of football. The pain worried during the last year.

Objectively: a mountainous region tibia defined redness, swelling and tenderness.

On the X-ray upper third of the leg bones is determined by the fragmentation of the tibia's tuberosity.

- 1. Pre-clinical diagnosis. Differential diagnosis.**
- 2. The program of treatment and preventive measures.**
- 3. Recommendations about the prospects of such a professional orientation sport, like football.**

Task 5.

To the doctor appealed the mother with a child of 6 years. According to the mother the child began to complain of pain in the left foot and fatigue. The baby was born at a normal birth. The boy had been ill with measles.

When viewed from a slight swelling is determined by the rear surface of the left foot, preferably the medial side. determined by palpation soreness, and when go - sparing lameness.

On the X-ray of the left foot is determined flattening of scaphoid and its mosaic structure.

- 1. What disease is present in this patient?**
- 2. What is the tactics of traumatologist the treatment of this disease?**
- 3. Forecast and recommendations**

Task 6.

The patient K., 22 years old, complaining of pain in his right foot, worse when walking.

Objectively there is tenderness and swelling on palpation at the site of metatarsophalangeal joints II and III toes. Movement is limited. When the axial load on the fingers II and III is determined by pain.

On foot X-ray in 2 projections is determined by flattening II and III heads of metatarsal bones, the expansion joint space.

- 1. What disease is present in the patient?**
- 2. What kind of conservative and surgical methods of treatment of this pathology?**
- 3. The course and prognosis of the Kohler's disease?**

Task 7.

Patient K., 25 years old, a mechanic, went to a doctor with complaints of pain in the right-ray of the wrist. There was no history of trauma. The pain worried during the last three years, increased during exercise.

Objectively. There is swelling on the dorsum of the right hand, pain on palpation. The strength of the forearm muscles is reduced.

On radiographs of the right hand is determined by the flattening and fragmentation of the lunate bone.

- 1. Diagnosis and differential diagnosis.**
- 2. What are the osteochondropathy treatments?**
- 3. Surgical treatment and prognosis of the disease?**

Task 8.

Patient K., 16 years old, complains of pain in the spine during the year. The pain usually occurs at the end of the day, sometimes it can be hard to straighten the spine. There was no history of trauma.

When viewed determined pronounced thoracic kyphosis. Pain in the spine increases with extension and percussion spinous processes of middle-thoracic spine. Back muscles are not tense.

In the thoracic spine radiographs in side view marked reduction in the distance between the bodies Th5-Th6-Th7 vertebrae that are wedge-shaped, upper and lower their surface rough, wavy. Intervertebral gap widened.

- 1. Provide differential diagnosis between osteochondropathy (Scheuermann- Mau disease) and tuberculous spondylitis.**
- 2. What is the treatment plan with the spine osteochondropathy?**
- 3. The average duration of treatment and the prognosis of the disease?**

Task 9.

Child N., 9 years old, with complaints of pain in the thoracic spine, the sensation of chronic fatigue. According to the parents the child began to complain of pain a year ago, but without treatment.

Objectively: the spine axis is correct, there is no swelling and tension of muscles. There is local tenderness in the area of the 6th thoracic vertebra. movement is not violated in the thoracic spine. Symptom axial load on spine is negative.

On spine X-ray in side view a sharp flattening of the body of the 6th thoracic vertebra. Front it is separated at the front edge of IV and V of the thoracic vertebrae. Intervertebral discs above and below the vertebral modified moderately dilated.

- 1. Clinical and radiological manifestation of the Calve's disease?**
- 2. The stages of the Calve's disease?**
- 3. What treatment is applied in this pathology and its prognosis?**

Task 10.

Child B., 10 years old, complains of pain in his right hand, restrictions on withdrawal of the shoulder. According to the parents the child began to complain about 6-8 months ago, there was no injury hand.

Objectively. the right shoulder joint contours are not changed, found only a minor muscle atrophy. Active movements are limited in the shoulder joint (Elbow - up to an angle 70 degrees), passive - full.

On radiographs in two projections defined by an extension of the joint space, flattening of the humeral head with the sealing portions and rarefaction of bone substance.

- 1. Differential diagnosis between osteochondropathy of humeral head (Gass's disease) and osteoblastoclastoma.**
- 2. What stage of development of osteochondropathy?**
- 3. What is the treatment plan osteochondropathy humeral head, life and prognosis of treatment?**

Task 11.

Child S., 14 years old, with complaints of fatigue and pain in the right hip, lameness. According to the parents the child was limp a few months ago, before complaining of pain in his leg, but no treatment has not started. limb injury was not. Previously treated on the right

hip dysplasia, the boy was up to 1 year in the Pavlik's stirrups. In the future, he had no complaints, engaged in physical exercise.

Objectively. At the time of the inspection no complaints. Pain occurs when sharp internal and external rotation of the hip, the motion moderately limited.

On the right hip X-ray form femoral head cysts modified by reducing its length, its abnormal contours. Bone head structure homogeneous.

1. Stages of development of femur head osteochondropathy?

2. Surgical treatment of osteochondropathy?

3. Forecast of treating disease Leg-Calve-Perthes disease?

Task 12.

Patient N., 25 years old, complaining of pain in his right knee, which arose spontaneously, cant specify the cause. Pain increases by the end of the working day. The patient worked as a mechanist. Periodically determined in the joint effusion. He used self-treatment.

Objectively. Joint contours moderately smoothed. Determined pain in the joint space. Range of motion in the knee joint is full.

On radiographs detected semilunar recess on the outer surface the internal condyle of the femur.

1. What is the character of pathology in this patient?

2. What are the treatments of osteochondropathy?

3. Stahe of the Koenig's disease (Osteochondritis dissecans)?

Test questions.

1. Mats with a boy of 5 years went to the doctor traumatologist with ortopedu-complaining of fatigue when walking, a sharp limitation of movement in the right hip joint, pain radiating into the knee area, lameness when walking, hypotrophy of the thigh muscles.

There is no traumatic anamnesis. In the X-ray of the right hip slight expansion joint space. Mantoux test is negative. What is the preliminary diagnosis of the child?

- A. Congenital dislocation of the right hip;
- B. Tuberculosis of the right hip joint
- C. Osteochondropathy of femoral head
- D. Kodmani's tumor
- E. Valgus deformity of the neck of the right femur.

2. Young man of 14 years with complaints of pain in the right tibia tuberosity. The pain increases after exercise, soccer, while driving. On examination, the swelling in the projection of the tibial tubercle in comparison with the healthy. Local tenderness on palpation.

On the X-ray in the side view of the proximal tibia right notes enlightenment and fragmentation. What is the diagnosis?

- A. Fracture of the proximal part of the tibia
- B. Tuberculosis of right tibia
- C. Osgood-Shlatter's disease
- D. Tardiness point of ossification tubercle of the tibia in the proximal
- E. Osteomyelitis of the proximal tibia.

3. Which of the following symptoms characteristic of the Koenig's disease (osteochondritis dissecans)

- A. Pain on movement (flexion and extension) of the knee.
- B. Knee pain at rest
- C. "Block" in the knee joint
- D. On the radiograph into the knee joint cavity presence osteochondral fragment.
- E. All of these segments

4. Patrien 17 years old with complaints of pain in the forefoot when walking, the pain increases after exercise.

When viewed marked swelling the region II and III metatarsal bones in the distal, local pain on palpation of bone projections. No trauma in anamnesis.

On the radiograph in the antero-posterior projection marked deformation area II and III heads of metatarsal bones. What is the preliminary diagnosis of the patient?

- A. Fracture of metatarsal bone at the distal section
- B. Koehler II disease
- C. Osteomyelitis II and III metatarsals
- D. Gouty arthritis II and III metatarsal bones of the foot
- E. Forefoot metatarsalgia

5. Which of the following clinical symptoms in the diagnosis of probable Scheuermann's disease (thoracic vertebrae apophyses osteochondropathy)?

- A. Pain after exercise in the thoracic spine when viewed from a sharp increase in spinal kyphosis in the thoracic 12
- B. On palpation determined by pain in the projection of the spinous processes of the thoracic spine.
- C. When you try to straighten his back, the pain increases in the thoracic spine.
- D. A, B, C

6. What additional methods of research used in traumatology and orthopedics for determining osteochondropathy?

- A. X-ray inspection
- B. Ultrasonography
- C. Computer tomography
- D. Magnetic resonance imaging
- E. Radio-isotope diagnostics
- F. Rheovasography and echoosteography

G. densitometry

H. A, B, C, D, F

I. All.