

Traumatology and Orthopedics

Manual

Edited by
Professor
O.A. Buryanov

Second edition, revised

RECOMMENDED

*by the Central methodical Office for Junior
Professional Training of the Ministry of Health
of Ukraine as a manual for the students
of higher education establishments — medical
universities, institutes and academies*

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The manual has been worked out by the collective of the Chair of Traumatology and Orthopedics of O.O. Bohomolets National Medical University for independent extracurricular preparation for practical classes in traumatology and orthopedics.

The manual is aimed at subsequent perfection of clinical thinking, mastering and finalizing of practical skills, elaborating of systematic approach in clinical practice. In each topic there are questions for self-training, tests of previous and final control, situation problems. In addition, there is an *Information Block*, which gives the newest data on each topic, recommendations concerning curing patients, the list of necessary practical skills the student is to grasp in the course of studying the whole series of units in traumatology and orthopedics.

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Traumatology and Orthopedics

Syllabus

1. The purpose of teaching:

1.1. To give students the knowledge necessary for the prophylaxis of traumatism and orthopedic diseases, organization of traumatological and orthopedic help in Ukraine, methods of inspection, diagnostics and medical treatment of patients with disorders and injuries of the musculoskeletal system, restoration of working capacity and making working ability prognosis.

2. Tasks:

2.1. The student must know:

- the organizational structure of traumatological and orthopedic help in Ukraine, the history of the development of traumatology and orthopedics;
- musculoskeletal system anatomy;
- clinicolaboratory indexes of diseases;
- the tactics of patients management;
- the modern classification, etiology and pathogenesis of diseases and injuries of the musculoskeletal system;
- the clinical picture and methods of medical treatment of the most widespread diseases and injuries of the musculoskeletal system;
- the basic points of rehabilitation, the terms of immobilization and disability, reasons for invalidism;
- pharmacotherapeutic influence of medicinal substances, physiotherapeutic and balneal procedures on the organism, principles of physiotherapy exercises;
- the basic stages and methods of conducting planned and emergency operations, questions of aseptics and antiseptics, general and local anesthesia.

2.2. The student must be able:

- to examine the patients with diseases and damages of the musculoskeletal system (examination, palpation, measuring, estimation of radiological, laboratory and other data), put an initial diagnosis and conduct differential diagnostics with similar syndromes;

- to provide emergency medical help in case of injuries of the musculoskeletal system, produce transport immobilization with the help of standard and improvised means, induce local anesthesia in case of bone fractures and injuries of joints;
- to prepare plaster cast material and apply different types of plaster bandages (plaster splint, cylinder plaster cast), take care of patients with plaster cast, discard plaster cast;
- to apply and discard skeletal extension;
- to set bones in case of shoulder, forearm, hip, foot dislocation;
- to appose the fragments in proper alignment in case of distal radius fracture and humeral bone fracture in the site of the surgical neck; do the puncture of the knee joint;
- to stop bleeding, bandage, assist in operation;
- to redress and correct deformations caused by congenital diseases: clubfoot, myogenic torticollis, dysplasia of the hip joint; apply a fixed bandage and orthopedic devices after correcting the deformations;
- to carry out the examination of temporary and permanent disability and rehabilitation of patients.

3. The list of disciplines with specifying the sections, the mastering of which is needed for the study of traumatology and orthopedics:

3.1. Normal anatomy: osteology, myology, syndesmology, joint structure.

3.2. Pathologic anatomy: inflammation, degenerative-dystrophic damage.

3.3. Histology: the structure of bone and cartilaginous tissue, physiologic regeneration of the bone tissue.

3.4. Radio-therapy and radiology: age-specific features of the skeleton, radiological imaging; radiological exploration of the skeleton; sciagraphy semiotics of diseases and lesions of the skeleton, radionuclide methods of musculoskeletal system diseases diagnostics.

3.5. Operative surgery and topographical anatomy: operative approaches to large joints, topography of neurovascular formations of extremities, amputation and exarticulation, surgical armaments.

UNIT 1

Methods of Inspecting Orthopedics and Traumatology Patients

Introduction. General clinical methods of inspection are the basis of inspecting orthopedic-traumatologic patients. However the specificity of orthopedic diseases and the clinical picture of traumas require certain knowledge.

Basic Literature:

1. Трубников В.Ф. Травматология и ортопедия. – К.: Высшая школа, 1986. – 590 с.
2. Юмашев Г.С. Травматология и ортопедия. – М.: Медицина, 1995. – 538 с.

Supplementary Literature:

1. Дюбенко К.А., Коломенцев А.К., Чайковський Ю.Б. Анатомія людини. – 2004.
2. Крисъ-Пугач А.П. з співавт. Обстеження та діагностика опорно-рухових розладів у дітей. – К. – Хмельн., 2002. – 216 с.
3. Маркс В.О. Ортопедическая диагностика. — Минск: Прогресс, 2001. – 511 с.
4. Орнштейн Э., Войня А. Семиотика и диагностика в травматологии и ортопедии. – Кишинев, 1992. – 450 с.
5. Сулова О.Я. с соавт. Рентгенодиагностика поврежденных и заболеланий опорно-двигательного аппарата. — К.: Здоровье, 1989. — 256 с.
6. Cyriax J. Textbook of orthopaedic medicine // 7th ed. Vol. I., Bailliere Tindall: London, 1988. – 805 p.
7. Hoppenfeld S. Physical examination of the spine and extremities. Appleton Century Crofts. – New York: A Publ. Division of Prentice-Hall, Inc., 1976. – 276 p.
8. Keats T.E. An atlas of normal roentgen variants that may simulate disease. – 2nd ed. – Chicago: Year Book Medical Publishers, 1999. – 371 p.

9. *Russe O.* An atlas of examination, standard measurements and diagnosis in orthopaedics and traumatology. – Stuttgart: H. Huber Publ., 1972.

10. Internet resources.

General aim: to be able to take the case history from the patient taking into account the mechanism of injury; from orthopedic patients with peculiarities of the course of disease; to expose that or other deformation of the musculoskeletal system by means of clinical and radiological methods. On the basis of clinical constellation, taking into account radiological and laboratory data to diagnose and draw up a plan of conservative and surgical medical treatment.

Specific aims:

To learn:

- the methods of inspecting the spine, pelvis, shoulder girdle, upper and lower extremities, of viewing the support-locomotion organs in interconnection with each other as a sole functional system of the human organism;
- the detection of basic deformations of the trunk and extremities;
- the measuring of the extremities length by means of a measuring tape and determining the anatomic, relative and functional shortening;
- determining the joint range of motions by means of goniometry;
- interpreting sciagrams and laboratory tests.

The Program of Self-Training

Task 1. *To check the initial level of knowledge give answers to the questions:*

1. Enumerate the general rules of inspecting a patient.
2. What are the features of inspecting orthopedic and traumatologic patients?

Task 2. *On the grounds of the basic and supplementary literature answer the following questions in written form:*

1. Enumerate the features of examination in case of traumatic injuries and orthopedic diseases of the spine.

2. What radiological changes do we observe in case of spine fractures and orthopedic diseases of the spine (congenital diseases, scoliosis, spondylolisthesis etc)?

3. What landmarks should we pay attention to while examining patients with upper and lower extremities injuries?

4. What is the roentgenographic evidence of bone fractures of upper and lower extremities (typical bone fragments displacements)?

5. What is the roentgenographic evidence of orthopedic diseases of upper and lower extremities?

6. What laboratory methods are needed for the inspection of orthopedic-traumatologic patients?

The Program of Independent Work at the Practical Class

Task 3. Curing.

Aims and tasks:

1. To master the sequential maneuvers of clinical examination of orthopedic-traumatologic patients.

2. To learn to examine an orthopedic-traumatologic patient.

3. To learn to palpate the patients with injuries and diseases of locomotor system organs.

4. To learn the percussion and auscultation of the diseases of locomotor system organs.

5. To learn to determine the range of active and passive motions in the joints of upper and lower extremities.

6. To study to determine the range of motions of different parts of the spine.

7. To learn to measure the length of extremities and podomeres.

8. To learn to determine the strength of separate muscles.

9. To know the description of certain types of gait.

10. To interpret X-ray and laboratory researches data.

Procedure:

1. *When obtaining anamnesis* attention must be paid to the beginning of the disease of an orthopedic patient or to the mechanism of injury of a victim.

2. *During examination* to determine the features of movement and self-service; the position of trunk and extremities