MINISTRY OF HEALTH OF UKRAINE
ODESSA NATIONAL MEDICAL UNIVERSITY

Medical Faculty № 2
Department Traumatology, Orthopedics and Battlefield surgery

I APPROVE
Vice Rector for scientific and pedagogical work
_____ Eduard BURYACHKOVSKIY
" 2nd" September 2024

METHODOLOGICAL RECOMMENDATIONS FOR PRACTICAL CLASSES ON THE DISCIPLINE

5th COURSE OF THE INTERNATIONAL FACULTY
EDUCTIONAL DISCIPLINE «TRAUMATOLOGY AND ORTHOPEDICS»

Approved:
At the meeting of Traumatology, Orthopedics
and Battlefield surgery department
Odessa National Medical University
Protocol № 1, 26.08.2024

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PRACTICAL CLASSES

Practical class 1.

Topic: «*EXAMINATION FEATURES OF TRAUMA AND ORTHOPEDIC PATIENTS*» − **4 *hours***

Goal: To familiar students with modern methods and sequence of examination of patients with injuries and diseases of the musculoskeletal system in order to establish the correct diagnosis.To view the contribution of domestic scientists, MI Sitenko, NP Novachenko, AA Korzh, IG Hertzen et al. In the organization of trauma care, development and usoverschenstvovanie treatments. To be able to explain to the patient the need for consistent and thorough examination with a view to its diagnosis and appropriate treatment.

- to know:

1. The mechanism of injury
2. Symptoms of damage or bone disease
3. Organization of the patients receiving
4. Status of the treatment process and the scientific direction of the department
5. Clinical, radiological and laboratory examination methods

- to be able to:

1. Carefully collect anamnesis of illness or injury
2. Gather the family and epidemiological. anamnesis
3. Check the clinical symptoms of the disease / injury /
4. Read the damaged segment of the X-ray

Basic concepts:

Proper technique is the victim survey - the basis in diagnosis and early treatment. Examination of the patient with an injury or its consequences is from the survey (complaints and history of trauma), inspection, palpation, percussion, auscultation, determining range of motion in joints, limbs length measurement, determination of muscle strength and function of the limb. And only then resort to the selection of additional methods of research: laboratory, X-ray, ultrasound, etc.

Questioning the patient.

If the patient is conscious, that his complaints may indicate a major source of pain and often - to damage the segment. A very important role is played by history. It is necessary to find out the time, place and circumstances of the injury. While the first two factors are interested in legal bodies, the mechanism of injury diagnosis can assume or reject it. For example, if the victim was hit with a stick on the back and can be broken appendages and the vertebral arch, but not the body.

Examination of the patient

Inspection is better to make the full nudity of the victim, and if this is not necessary, it is possible to restrict inspection of half of the body, with limbs visiting both for comparison. With this method, the survey can reveal benign posture of the patient, the deformation due to swelling of body segments, bruises or bone damage, increase or disappearance of the physiological curves of the spine, muscle tension, unnatural installation limbs at dislocations. deviation of a limb or its segment outwards or inwards sometimes visible. In the first case, there is a corner, open outwards, such distortion is called valgus. In the event medially segment, the angle will also be open inwards, and the deformation is called varus.

Palpation

Palpation staged trauma diagnosis plays an important, if not decisive, role. With it you can determine the point of maximum pain, presence of hematoma, fluid in the joint cavity, bone deformation, its pathological mobility, crepitus. Palpable identify reliable sign of a fracture - a symptom of the axial load. When the feeling is possible to determine the violation of external benchmarks bones that form joints. For example, in a bent elbow line drawn through the outer and inner shoulder and across the top of the olecranon form an equilateral triangle, while the hand straightened the three points lie on one line - the line and triangle Gyuntera. When these fractures formations vary outside of the joint guidelines.

Percussion and auscultation

These two methods are used for injuries of the chest and abdominal organs to diagnose damage to the heart, lungs, intestines (peritonitis, internal bleeding, etc). For

fractures of the long bones auscultation and percussion check symptom of disorders of bone conduction: puts the stethoscope to the greater trochanter, and bent III Tapping a finger on the femoral condyle, the sound carried well in the whole bone in fractures with lack of bone contact sound is not conducted. If the fragments are in contact-sound conduction sharply reduced compared to the healthy side.

Determination of the range of motion in the joints

Always check the amount of active movements in the joints, and when they are limited - and passive. Range of motion is determined using protractor whose axis is set in accordance with the joint axis and the jaws protractor - along the line segments forming the joint. Measuring movements in the limbs and joints of the spine produced by the method of international **SFTR** (neutral - 0 °, **S**-motion in the sagittal plane, **F**- in the front, **T**- movement in transversal [cross-section] plane, the **R** - rotary motion). A zero (neutral) position for the upper extremities - hands lowered position; for the lower extremities - legs arranged in parallel - limb axis forms with bispinalnoy line angle of 90 °. Shoulder Joint - starting position with a lowered hand, check abduction, adduction, flexion and extension. The starting position for the elbow-full extension (0 °), a brush mounted on the forearm axis (0 °). The elbow flexion and extension are exploring, at the wrist - flexion, extension, abduction radius and ulna. In cases of violation of the upper limb joints function functionally advantageous position for her will: allocating 70-80 °, anterior deviation of 30 °, elbow flexion 90 °, at the wrist - dorsiflexion angle to 25 °. The starting position of the hip and knee joints - straight leg (0 °). The hip joint is checked by flexion, extension, adduction and abduction, knee - flexion and extension. The ankle joint to its original position at an angle of 90 °, check flexion, extension, abduction and adduction, functionally advantageous position of the lower limbs for walking: flexion of the hip joint 25-30 °, abduction 10 °, flexion 10 ° knee, ankle 10.

Measurement of limb length

Measure the length and circumference of a limb produces measuring tape. Circumference measured on symmetrical shoulder level, forearm, hand, thigh, leg and foot to the right and the left. There are anatomical (true) and functional limb length. Anatomical upper limb length is measured from the greater tuberosity of the humerus to

the olecranon and from the olecranon to the styloid process of the ulna. Functional length - from the acromion process of the scapula to the end of the finger phalanx III. Anatomical lower limb length is determined by the greater trochanter of the femur to the lateral malleolus, functional - from the anterior superior iliac spine of the pelvis to the medial malleolus.

Determination of muscle strength

Muscle strength is determined by the action and reaction, ie, the patient is asked to perform for the inherent movement of the joint and counteracting hand exploring determine muscle tension. Muscle strength was evaluated by 5-point scale: 5 points - the muscles of the healthy limb, 4 points - a slight muscle atrophy, but the force overcomes the weight of the limb segment and the obstacle created by the researchers a hand. However, the resistance is weaker than the healthy limb. 3 points - moderate atrophy of the muscles active to overcome the weight of the segment, but without resistance. 2 points - marked atrophy of the muscles barely reduced, but without the weight of the segment. 1 point - severe muscle atrophy, no cuts.

Definition of limb function

Violation of the functions in the acute injury is determined by the presence of pain, failure of the affected element of the musculoskeletal system: dislocation, fracture, nerve damage, rupture of a tendon, muscle and ligament. Especially clearly breach the main support functions of the lower limbs is damaged bones. The functions of the upper limb are limited to less. Violation of the functions of the spine compression fractures of the thoracic and lumbar vertebrae are detected with the appropriate symptoms. To detect abnormalities in the elements all needed technique victim surveys, including additional.

Additional methods of research

X-ray diagnostics - a leading method of research in osteology. With the help of X-rays may not only confirm the diagnosis of diseases such as bone tumors, arthritis, and the like, but also to monitor the dynamics of the pathological process in the bones and joints. Thus, only X-ray can determine the stage of disease and appropriate treatment when osteochondropathy.

When fractures x-ray does not help much in diagnosis, how to clarify the nature of fracture fragments direction, location fragments after reduction, the flow of reparative process.

Contrast arthrography

When intra-articular diseases and injuries often perform contrast arthrography. For example, with congenital hip dislocation contrast arthrography gives an idea of the shape of the hip joint capsule, the presence of soft tissue barriers to reposition the hip conservative. This method allows to diagnose intra-articular lesions: hypertrophy para patellar posttraumatic tissue, torn meniscus, articular "mouse" and others.

In inflammatory processes of the original X-ray changes in the bones and joints can be detected after 2.5-3 weeks after the onset of clinical symptoms. And if developed pathological process of X-ray pattern is typical of this disease, the early radiographic signs of the disease detected only in comparison with the same healthy joint or bone.

One of the main conditions for a correct reading of the X-ray - a thorough clinical study of the patient as a whole and defeat the place - in particular. This clinical study should be preceded by X-ray.

Diagnostic clinical and radiological monitoring is considered the most complete, if the orthopedic trauma he seizes reading radiographs, not only builds its findings on data from a written conclusion of the radiologist.

Numerous diseases, deformation of bones and joints have inherent radiological symptoms. At the same time, watch and such common symptoms as osteoporosis, osteosclerosis, bone destruction and others. Therefore, any radiographic changes should be interpreted taking into account the history of the disease and clinical trial data.

X-ray computed tomography

CT allows you to take pictures of the individual layers of organs and tissues in the axial projection, it helps to study the structure of the bone substance, to determine bone density, to explore the state of the soft tissue, articular cartilage, spinal canal walls, build a three-dimensional image of the skeleton. The method is based on the use of X-ray and computer technology.

Ultrasound scan

Method most informative when studying soft tissues. The ability of the ultrasound to penetrate without significant absorption into the soft tissues of the organism and affect the seal used for diagnostic purposes. In the study reveals gaps tendons, joint effusion, proliferative changes in the synovium, synovial cysts, abscesses, hematomas or foreign bodies in soft tissues.

Magnetic resonance imaging

On tomograms displayed good muscles, fat layer, cartilage, blood vessels, brain and spinal cord, intervertebral discs, the periosteum. Bone tissue magnetic resonance signal does not.

Other methods

For more objective evaluation of the musculoskeletal system is used the following biomechanical and physiological methods.

Podography - registration procedure of temporary step parameters. You can use it to describe the gait of the patient to determine the presence and severity of lameness, to investigate the state of rolling through the various departments of the foot. This method allows you to quickly and easily evaluate the main article and kinetic changes in distance, follow their dynamics in the course of treatment.

Tenzopodografiya - along with temporary register and load characteristics step, the pressure distribution between the heel and toe during walking. The technique allows a more accurate assessment of gait, to reveal features of the pressure distribution on the foot and its departments. Electromyography - Check muscle electrical potentials via cutaneous or needle electrodes. Apply for a full examination of muscle function, its participation in the execution of the different movements. Electromyography allows you to navigate in the nature and degree of the neuromuscular system damage, determine (roughly) the injury.

Stimulation electromyography - receipt and registration of evoked potentials of muscles and nerves. You can use it to determine not only the nature and extent of damage to the neuromuscular system, but also to accurately detect the fault location in

the reflex arc, to investigate the speed of propagation of impulses along the nerves, synaptic transmission function.

Rheovasography - procedure of registration of the total resistance of any part of the body while passing through the high-frequency current. With it is possible to study non-invasive blood circulation in some organ, and in a certain segment of the limb. Augmented medicamental tests (eg, nitroglycerin), it allows you to identify not only the nature of blood flow disorders (decrease or increase), but the reasons (spasm, compression paresis or vessels).

Polarography - a method of studying the oxygen tension in the tissues. With special electrodes can determine the oxygen tension in the zone of pathology (bruise, fracture, etc.) and in the surrounding tissues.

Bone scan - radionuclide vizualiztsiya skeleton. The method is carried out using osteotropic radiopharmaceuticals, entered intravenously. Including them in the bone reflects the state in bone blood flow and intensity in her metabolism. Gamma radiation is recorded radiolabel gamma camera and converted into a visible image. Moving table gamma camera allows you to visualize the distribution of the radiopharmaceutical in the whole skeleton. Normally note a relatively uniform and symmetrical accumulation of radiopharmaceutical in the skeleton. When tumor metastases detected "hot pockets". Hyperfixation radiopharmaceutical detected in fracture, with osteomyelitis, arthritis, primary malignant bone tumors. Local reduction in radiopharmaceutical concentration was observed in aseptic necrosis of bone.

Diagnostic arthroscopy allows you to explore all of the joint departments, to assess the state of the synovial membrane, articular cartilage, reveal loose cartilaginous bodies to take to investigate the histological pathological tissue, synovial fluid. Arthroscopy, despite its high informative carried out at the final stage of examination of patients if the diagnosis cannot be the refined with the help of clinical and paraclinical methods.

Morphological examination

Morphological examination is performed in orthopedics for many diseases of bones and joints. In patients with malignant tumors of the bone it is used to refine the

preoperative diagnosis and decide on the volume of the proposed surgery. For this purpose, produce a biopsy. It can be a puncture, if the tumor is located in remote places. Typically, it is performed prior to surgery. Most have resorted to open an urgent biopsy and upon receipt of the result of the morphological study determined the amount of the operation. It can be obtained by biopsy and diagnostic arthroscopy.

Laboratory research

In addition to conventional research (common blood and urine tests), biochemical analyzes in some patients give an idea about this or that disease. It is particularly important biochemical blood tests in the diagnosis of bone tumors, inflammatory and specific (tuberculosis, syphilis), and related diseases. Biochemical studies are important for the control of the disease in the course of traumatic mechanical, thermal and radiation injuries. Without them you can not do while preparing the patient to surgery.

Equipment: laptop, multimedia presentation on the subject of practical training, educational videos.

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.) - not foreseen.

3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

a) Oral survey, conversation, collective discussion and discussion on the subject of the lesson;

b) List of educational practical tasks that must be completed during practical classes: based on the proposed clinical situations:

A. Self-assessment initial level of knowledge, skills:

Choose the correct answer.

1. The length of the lower limb includes the distance from the anterior superior spine to the pelvis:

A. Greater trochanter

B. Articular knee joint gap

C. The edges of the inner (outer) Ankle

D. Calcanea tuber (Correct answer - In)

2. A reliable sign of limb fracture:

A. Deformation of limbs

B. Severe pain at the site of injury

C. Violation of the function

D. Shortening of limb

E. Crepitus (Correct answer - D)

3. A reliable sign of dislocation:

A. Limited and springing motion in the joint

B. Deformation

C. Crepitus fragments

D. Violation of axis of the limb

E. Violation of the function (The correct answer - A)

4. Limitation of mobility in the joint is usually characterized by the following clinical signs, except:

A flexion contracture

B. extension contractures

C. Regidnost

D. Ankylosis

E. Marked swelling of the tissues (Correct answer - D)

5. XR study allows you to install all the signs, except:

A. Ankylosis

B. Contracture

C. Nature of displacement of bone fragments

D. Osteoporosis Bone

E. degree of consolidation of bone fragments (The correct answer is - B)

The orienting map for independent work with literature according to the topic

№	Main goals	Instructions	Answers
1	To collect complaints and anamnesis of the patient	Determine when it is not necessary to do	
2	Perform a visual inspection, palpation and auscultation of the patient	The procedure for carrying out all of these actions	
3	Perform measurement limbs, her circle, the angles of motion in joints	Which devices and devices is carried out	
4	Additional tests	Different types of X-ray examination, laboratory diagnostics	

Requirements for work results, including design: the written work must be written or printed, have a neat appearance, the date, topic, task number, name of the performer must be indicated at the beginning, the text must be legible, structured;

Summing up: announcement of grades based on the results of the lesson. The grade for one practical lesson is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

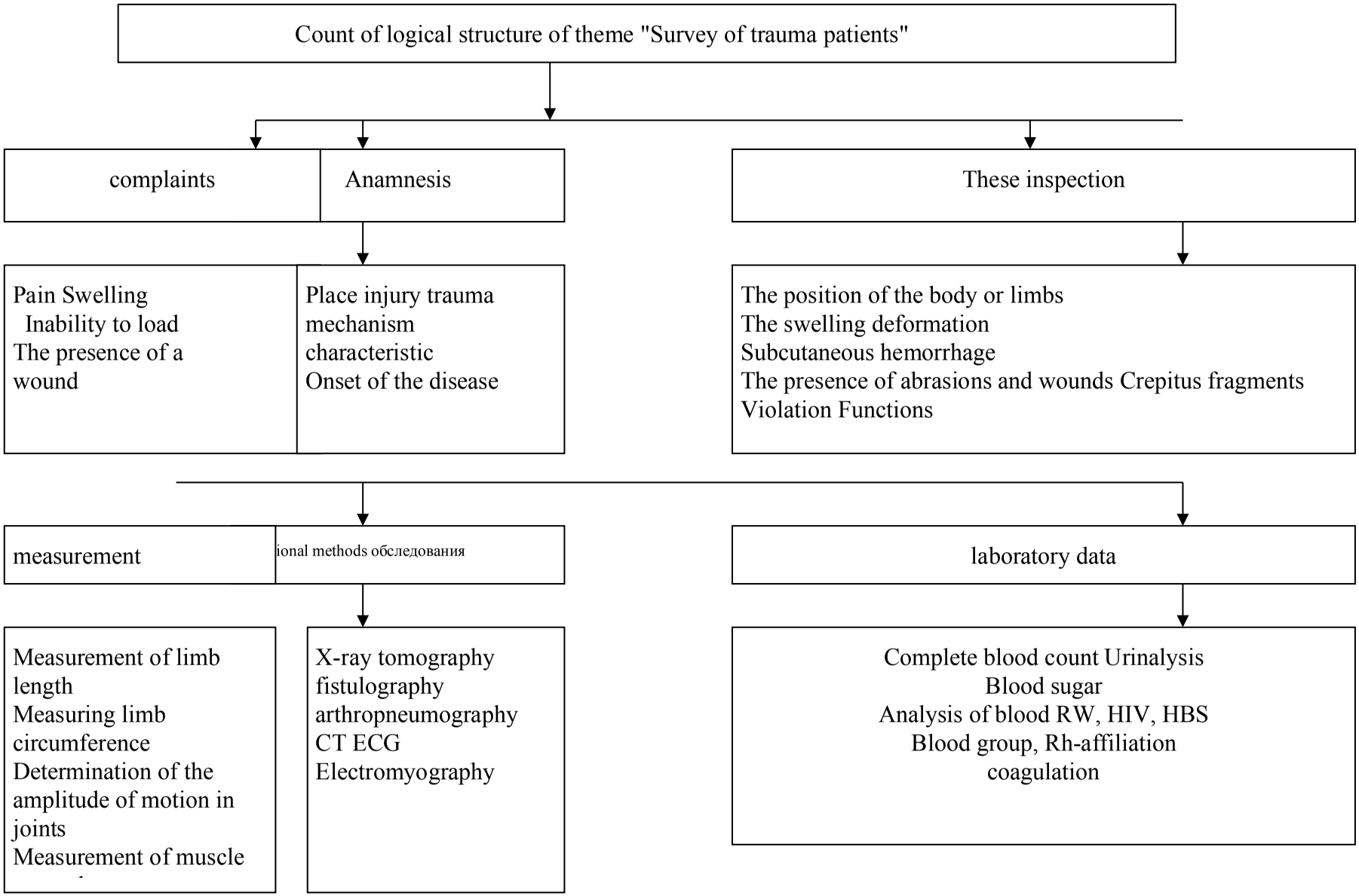
List of recommended literature:

Basic:

1.V.F.Venger, V.V.Serdyuk Rashed Mochammad Traumatology and orthopedics: Compilation of methodical developments to the practical studies on traumatology and

orthopedics including the materials for self-training of students of medical institutes of higher education. – Odessa: Print, 2004. – 248 p.

2. Golka G.G., Burianov O.A., Klimovitskiy V.G. Traumatology and orthopedics: textbook for students of higher medical educational institutions : transl. from. ukr. lang. – Vinnytsia : Nova Knyha, 2018. – 400 p.


Count of logical structure of theme "Survey of trauma patients"
complaints
Anamnesis
These inspection
Pain Swelling
Inability to load
The presence of a
wound
Place injury trauma
mechanism
characteristic
Onset of the disease
The position of the body or limbs
The swelling deformation
Subcutaneous hemorrhage
The presence of abrasions and wounds Crepitus fragments
Violation Functions
measurement
ional methods обследования
laboratory data
Measurement of limb
length
Measuring limb
circumference
Determination of the
amplitude of motion in
joints
Measurement of muscle
X-ray tomography
fistulography
arthropneumography
CT ECG
Electromyography
Complete blood count Urinalysis
Blood sugar
Analysis of blood RW, HIV, HBS
Blood group, Rh-affiliation
coagulation

Practical class 2.

Topic: *«MODERN METHODS OF TREATMENT OF TRAUMATOLOGICAL AND ORTHOPEDIC PATIENTS IN OUTPATIENT SETTINGS»* **— 4 *hours***

Goal: To show modern structure and sequence of aid to the patients with injuries and diseases of musculoskeletal system on prehospital stage. To tell about the amount of work performed in the clinic, emergency room and hospital. To tell students about contribution of our scientists in organization of the traumatological aid, evolution and development of treatment methods. To explain to the patient necessity of his examination in clinic settings to determine the diagnosis and following treatment.

- to know:

1. Organization of traumatological aid.
2. Organization of reception and amount of aid to the patient.
3. Clinical, radiologic and laboratory methods of examination.
4. Structure of clinic and equipment of the traumatological emergency room.
5. Structure and principles of the traumatological emergency room.
6. Immunologic prevention of tetanus and rabies.
7. Terms of immobilization at fractures and dislocations of limbs.
8. Principles of rehabilitation of patients after injuries and diseases of locomotor system.

- be able to:

1. Get the anamnesis of disease or injury.
2. Read the X-ray picture of injured segment.
3. Provide the first aid at burns and frostbites.
4. Make anesthesia of the fracture area and puncture of joint.
5. Make manual reposition of simple fractures.
6. Impose simple gypsum bandage.
7. Take off the gypsum bandage and conduct the following recovery treatment.

Basic concepts:

Often first aid is started by the victim himself (self-help) or surrounding him persons without medical education (mutual assistance). Thanks to a well-developed

medical net volume and time of such aid are kept to a minimum. Most often, the next step (and sometimes the first) is aid of medium medical staff of clinics, health centers, dispensaries enterprises. In addition, a physician can provide first aid, because large firms have health centers with staff with higher education, and brigades at stations of ambulance are also headed by doctors. First aid is to stop external bleeding, introduction of anesthesia, bandages, transport immobilization, etc.

Out-patient care.

Outpatient care is as skilled or specialized care. It is rendered at traumatological emergency rooms, traumatological cabinets in clinics and in-patient admission. In these institutions (except the last) affected treated until full recovery.

Outpatient traumatological and orthotic care is rendered in surgical and traumatological offices of regional and city health clinics and accident sites.

Targets and tasks of traumatological emergency rooms.

Main functions of traumatological emergency rooms.

1. 24-hour emergency outpatient traumatological care for victims.
2. Sorting of incoming patients. The doctor of traumatological emergency room should identify victims needed hospital treatment and direct them to hospitalization in appropriate department: trauma, neurosurgery, surgery, etc.
3. Primary reception of injured and treated patients until full recovery of the health and capacity.

• To maintain the flow of patients, even in a good settings, a doctor must have deep theoretical and practical skills. For a short time of the primary reception he must solve a number of tasks: diagnostic, therapeutic and tactical, deontological plan with patients and their relatives. In addition, the doctor is a technical performer, as the blockade, reposition, wound surgery and other manipulations are part of his duties.

• Insufficient training in any of the sections will lead to a variety of errors with the attendant consequences. Errors in the work are costly to the patient, the State and the doctor.

4. Treatment of patients discharged from hospital. This includes monitoring the sick

during the immobilization, the removal of plaster casts, identification of further tactics, rehabilitation treatment: physical therapy, therapeutic physical exercise etc.

5. Unloading of receiving offices of hospitals from outpatients. Sorting reduces the number of outpatients, sent without the need to a hospital, and 24-hours work eliminates hospitals flow of patients with outpatient trauma.

6. Prevention of traumatism. Traumatological emergency room is linked with industry offices and other organizations of its area. Doctors are involved in the parsing of injuries, speaking in lectures, discussions; contribute to the proliferation of billboards.

The success of traumatological emergency room depends from the correct organization of work, literacy and consistency of staff. Nurses of registry and reception, dressing-operation nurses, assistant at x-ray room, gypsum technician, physiotherapy nurse, etc.

Structure and equipment of traumatological emergency room and traumatological cabinet

Traumatological emergency room is a separate administrative unit and its staff consists of head, medical residents, intermediate and junior medical staff.

Traumatological center must have the following facilities.

1. Reception of patients near a waiting room. Here duty doctor meets new patients, examines them and prepares the medical documentation.

2. X-ray cabinet. Here are produced x-rays of bones and joints.

Dressing cabinet and surgery room. Must be two adjacent rooms. In the dressing cabinet are performed anesthesia in areas of fractures, reposition, remove dislocations, do plaster bandages, implement immunization against tetanus, etc. At surgery room are performed puncture of joints, primary surgical treatment of wounds and other manipulations that require more strict aseptic and antiseptic rules.

4. The cabinet of repeated reception of patients near a waiting room. There are reception of patients previously been on the primary reception and aimed to continue treatment and patients discharged from inpatient to outpatient treatment.

5. Physiotherapy room. There are tools and machines required for treatment of acute injuries and their consequences: wax, mineral or earth wax, salt cure lamps and mercury-quartz, UHF, microwave therapy, electrophoresis, for the treatment of ultrasound, etc.

6. The cabinet of medical physical culture should have different therapeutic devices for a variety of active movements, as well as devices for mechanic therapy, because patients have violation of the functions in joints after trauma and immobilization of limbs.

7. Registry room serves as a repository of medical documentation of emergency room. It is issuing leaflets of disability and other forms of release from work, responds to requests from industry offices and police.

8. Gypsum room is a specially equipped room for applying and removing plaster bandages. Without this room, work of emergency room cannot be placed at the appropriate level.

9. Cabinet of Chief of emergency room is a place where decide all organization and medical questions. Here are renting and receiving of duties, training, meetings, etc.

10. Auxiliary rooms: material, cloakroom, toilets. If the staff regulations allow, an traumatological emergency room should be provided cabinet for primary and secondary reception of children.

Traumatological cabinet unlike to traumatological emergency room is a part of clinic. It must have at least four rooms: room for primary and secondary reception, bandaging room, surgery room, and plaster room. All supporting cabinets and services, including radiology, physiotherapy and exercise therapy, refer to the entire hospital. It is much worse, because they do not have a narrow focus of trauma, and doctors may not have experience in identifying and treating of injuries.

Special mention should be made on the x-ray of service clinics. One cabinet with one x-ray installation very inconvenient in work. The hour-long x-ray of thoracic organs, x-ray of the stomach and other complex and lengthy examinations mean that victims lose a lot of time on the diagnostic stage.

In-patient care.

In some cases, the victims are taken directly to the hospital, and when the examination reveals that they require only outpatient treatment. For patient are provided the necessary assistance, issue the certificate with amount of assistance, treatment recommendations and direction to the clinic or traumatological emergency room for further treatment and to receive documents exempting from work or study. Continuity of inpatient and outpatient clinics is easier if there is a traumatological emergency room.

If the damage cannot be treated in the outpatient setting, patients are taken to the traumatological and emergency departments of district or urban hospitals, where they get specialized assistance.

Periods of incapacity.

Until now, summary tables of the average terms of immobilization and disability were shown by various authors only at fractures, dislocations and soft tissue injuries: tendons, muscles and ligaments. There is no consensus about terms of treatment of dislocations, and information about damage of soft tissues don't let to organize themselves because they, or are missing or are partially. Is specified or immobilization period or period of rehabilitation. In most tutorials are no terms. Only questions about conservative or surgical treatment.

Equipment: laptop, multimedia presentation on the subject of practical training, educational videos.

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.) - not foreseen.

3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

a) Oral survey, conversation, collective discussion and discussion on the subject of the lesson;

b) List of educational practical tasks that must be completed during practical classes: based on the proposed clinical situations:

A. Self-test tasks for basic knowledge level and skills.

1. Main target of primary surgical treatment is:

A) Stop bleeding;

B) Excision of non-viable tissue and closing wounds;

C) Removing of foreign bodies and blood clots;

D) Ligation of thrombosed vessels;

E) Prevention of secondary bleeding. (Correct answer B)

2. The traumatological patient should be sent to State Medical and Social Examination Service in:

A) 1 month;

B) 2 months;

C) 3 months;

D) 4 months;

E) 5 months. (Correct answer C)

3. The physician in outpatient medical clinics may give sick-list for not more than:

A) 2 days;

B) 5 days;

C) 10 days;

D) 14 days;

E) 1 days. (Correct answer Б)

4. Physiotherapy is contraindicated at:

A) Presence of malignant formation;

B) Cardiovascular insufficiency in stage of compensation;

C) Contusions and fractures of limbs;

D) Stretching and inflammation of soft tissue;

E) Degenerative-dystrophic processes. (Correct answer A)

B. Indiviadual task:

The orienting map for independent work with literature according to the topic

№	Main tasks	Guidelines	Answers
1.	To implement inspection, palpation and auscultation of patient	Order of this methods	
2.	Additional methods of examination	Types of radiologic examination, laboratory diagnostic	
3.	To determine the clinical diagnosis	On the basis of objective, additional and laboratory data to justify clinical diagnosis	
4.	To define conservative or surgical treatment method	To name treatments of various traumatological and orthopedic patients	
5.	To define forecast of trauma	Terms of treatment and incapacity; possible disability	

C. Questions for self-control.

4.What is transport immobilization? List its types.

5.What is medical immobilization? List its types.

6.What is gypsum? What types of gypsum casts do you know?

7.General principles and techniques of the bandage imposing.

8.Amount and thickness of gypsum bandages at fractures of different segments of upper and lower limbs.

9.What is constant and intermittent immobilization, its use?

10.What is the Novocain blockade, its technique?

Requirements for work results, including design: the written work must be written or printed, have a neat appearance, the date, topic, task number, name of the performer must be indicated at the beginning, the text must be legible, structured;

Summing up: announcement of grades based on the results of the lesson. The grade for one practical lesson is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

List of recommended literature:

Basic:

1.V.F.Venger, V.V.Serdyuk Rashed Mochammad Traumatology and orthopedics: Compilation of methodical developments to the practical studies on traumatology and orthopedics including the materials for self-training of students of medical institutes of higher education. – Odessa: Print, 2004. – 248 p.

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Practical class 3.

Topic: «*TRAUMATIC DISLOCATIONS*» – **4** ***hours***

Goal: To teach applicants to diagnose, provide first aid and know the methods of treatment for traumatic dislocations. Acquaint applicants with the contribution of domestic scientists and employees of the department in the study of the problem of traumatic dislocations.

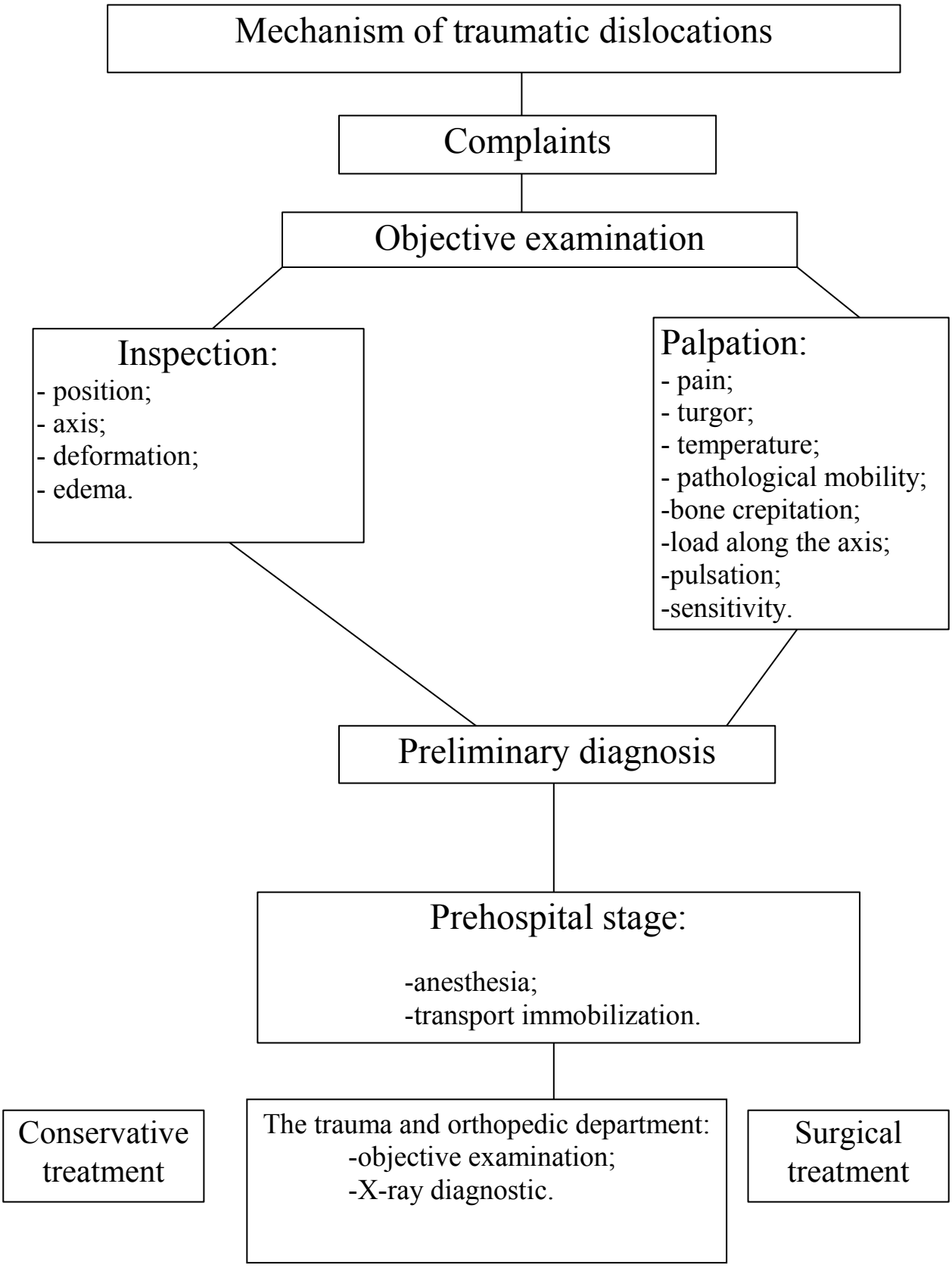
- to know:

1. Information, pointing on mechanism and character of injury.
2. Main clinical symptoms of traumatic dislocations.
3. First aid at traumatic dislocations.
4. X-ray picture of traumatic dislocations.
5. Treatment of traumatic dislocations.

- be able to:

1. Get from data of anamnesis information pointing on traumatic dislocations.
2. Interpret mechanism of injury.
3. Identify clinical signs of injury.
4. Interpret X-ray picture.
5. Provide inspection and palpation of joints.
6. Formulate the diagnosis.
7. Provide first aid.
8. Make transport immobilization.
9. Build plan of conservative and surgical treatment.

Basic concepts:



Equipment: laptop, multimedia presentation on the subject of practical training, educational videos.

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.) - not foreseen.

3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

a) Oral survey, conversation, collective discussion and discussion on the subject of the lesson;

b) List of educational practical tasks that must be completed during practical classes: based on the proposed clinical situations:

A. Self-test tasks for basic knowledge level and skills.

1. At inspection of patient with injury of right shoulder joint physician determined edema, deformation, local pain at palpation of shoulder joint area. Absence of movements. What injury is most expected?

A. Dislocation of the xiphoid process of the sternum

B. Fracture of the 11^{th} rib

C. Fracture of the xiphoid process of the sternum

D. Dislocation of the right shoulder (Correct answer is D)

E. Dislocation of clavicle sternal end

2. At patient with probable dislocation of forearm is determined little wound in area of elbow joint on the background of significant edema. Complaints of strong pain and impossibility of hand movements, at palpation of elbow joint is determined local pain. Deformation. What injury is most expected?

A. Edema

B. Strong pain

C. Disorder of limb function

D. Bleeding

E. Dislocation of forearm (Correct answer – E)

3. What ligaments of clavicle are damaged, when there is symptom of “ivory”?

A. Clavicular-coracoid

B. Acromioclavicular

C. Sternoclavicular

D. Clavicular-coracoid and acromioclavicular (Correct answer - D)

E. Clavicular-edged

B. Questions for self-control.

1. Classification of traumatic dislocations. Methods of treatment.
2. Types of traumatic dislocations. Diagnostic. Tactic of treatment.
3. Traumatic dislocations, possible complications, diagnostic, treatment.
4. Traumatic dislocations. Principles of treatment.
5. Terms of recovery after reduction.
6. Features of outpatient treatment of patients.
7. Types of immobilization at traumatic dislocations

C. The tests of different levels.

1. Patient complains of sharp pain in shoulder joint after falling on straight abducted arm. Retraction of deltoid is determined, acromion is palpated under the skin. Active movements are impossible, passive - springy and sharply painful. Make preliminary diagnosis.

A) Posterior dislocation of the shoulder

B) Fracture of the surgical neck of the humerus

C) Inferior dislocation of the shoulder

D) Anterior dislocation of the shoulder

E) Fracture of the clavicle acromial end

2. Patient fell down on street on the right shoulder. Felt sharp pain, could hardly move his arm. At clinical examination was determined symptom of “ivory”, which is clinical sign of:

A) Recurrent shoulder dislocation

B) Dislocation of the acromion process

C) Dislocation of the clavicle acromial end

D) Dislocation of the clavicle sternal end

E) Traumatic shoulder dislocation

3. Patient got injury going to workplace, falling down on left shoulder area. Felt pain in left shoulder girdle. Was diagnosed “Not full dislocation of the clavicle acromial end”. This injury happens:

A) At a complete break of acromioclavicular and clavicular-coracoid ligaments

B) At break of only acromioclavicular ligament

C) At break of just clavicular-coracoid ligament

D) At tension of acromioclavicular ligament

E) At tension of both ligaments

4. Patient has during last two years disorder of right shoulder joint, frequent dislocations. Is diagnosed “Recurrent shoulder dislocation”. Necessary treatment is:

A) Immobilization of the right upper limb with plaster cast of Desault type

B) Surgical treatment

C) The immobilization for 4 weeks with abduction tire of CITO

D) Closed reduction of dislocation

E) Reduction of dislocation under anesthesia and plaster bandage

5. Man in street fight, defending himself from hit of metal rod from above, raised under the hit right forearm. At the moment of hit felt sharp pain. At inspection physician of ambulance determined edema, crepitation, pain and deformation in area of elbow joint. Formulate the preliminary diagnosis.

A) Fractures of both bones of forearm in the upper third with displacement

B) Fracture of the ulna.

C) Fracture of the upper third of the ulna, dislocation of the radial head

D) Fracture of the distal radius bone, dislocation of the head of the ulna

E) Fracture of the radius

6. Patient fell down on right elbow with maximal bent forearm. Right elbow joint is enlarged, forearm is longer than the left, and the shoulder is shortened. Head of radius and coronoid process are palpated on frontal surface of elbow joint. Active movements are absent, passive – springy. Make preliminary diagnosis.

A) Fracture of the upper third of the forearm bones

B) Fracture of the olecranon

C) Fracture of the humerus condyles

D) Anterior dislocation of the bones of the forearm

E) Posterior dislocation of the bones of the forearm

7. Patient got to the hospital with complaints of pain in area of sternum. In area of sternal-clavicular joint is determined protrusion, swelling, local pain. At pulling on clavicle and at abducting of arm is determined the clavicle mobility and increasing of pain. Make preliminary diagnosis.

A) Fracture of clavicle sternal end

B) Dislocation of the clavicle sternal end

C) Fracture of the sternum

D) Fracture of rib

E) Contusion of soft tissue

8. At inspection patients complains of sharp pain in the left hip joint, impossibility of movements in it, she is lying on her back, left leg is bent in hip and knee joints, sharply abducted and rotated inwards. The leg is visually longer than the other. Great trochanter is not palpated. Active movements are absent, passive – springy. Make preliminary diagnosis.

A) Anterior dislocation of the hip

B) Posterior dislocation of the hip

C) Posterodorsal hip dislocation

D) Fracture of bottom of the acetabulum, the central dislocation of the hip

E) Fracture of the femoral neck

9. Patient has a diagnosis – closed frontal dislocation of shoulder with fracture of great tubercle with displacement. What is optimal medical tactic in this case?

A) Reduction by Dzhanelidze

B) Reduction by Mot

C) Is shown surgical treatment: reduction of dislocation and osteosynthesis

D) Reduction by Kocher

E) Reduction by Hippocrates

10. Playing with 3-aged girl mother raised her over floor holding her wrists. After that, the child began suddenly crying. Shows on pain in elbow joint area. What injury is most expected?

A) Dislocation of the forearm

B) Stretching of sack-ligamentous apparatus of the elbow joint

C) Traumatic neuritis of the radial nerve

D) Dislocation of radial head

E) Post-traumatic arthritis of the elbow joint

The orienting map for independent work with literature according to the

№	Main tasks	Guidelines	Answers
1.	Study etiology	To name main etiological factors of traumatic dislocations	
2.	Clinical symptoms	To build the classification of clinical manifestations of traumatic dislocations	
3.	Diagnostic	To list main methods of diagnostic at traumatic dislocations	
4.	Differential diagnostic	To write the diff. diagnostic`s table traumatic dislocations	
5.	Treatment	To build the treatment`s scheme of traumatic dislocations	

Requirements for work results, including design: the written work must be written or printed, have a neat appearance, the date, topic, task number, name of the performer must be indicated at the beginning, the text must be legible, structured;

Summing up: announcement of grades based on the results of the lesson. The grade for one practical lesson is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

List of recommended literature:

Basic:

1.V.F.Venger, V.V.Serdyuk Rashed Mochammad Traumatology and orthopedics: Compilation of methodical developments to the practical studies on traumatology and orthopedics including the materials for self-training of students of medical institutes of higher education. – Odessa: Print, 2004. – 248 p.

2. Golka G.G., Burianov O.A., Klimovitskiy V.G. Traumatology and orthopedics: textbook for students of higher medical educational institutions : transl. from. ukr. lang. – Vinnytsia : Nova Knyha, 2018. – 400 p.

Practical class 4.

Topic: *«DIAGNOSTICS AND TREATMENT OF UPPER LIMB INJURIES»* ***- 6 hours***

Goal: To teach students methods of diagnosis and medical care for fractures of the bones of the upper limb; to introduce the main methods of treatment of typical damages shoulder, forearm and hand in hospital and outpatient settings. The formation of a highly professional person a physician who is well-versed in matters of shoulder fractures, forearm and hand from the position a deep knowledge of clinical and anatomic, radiographic features of pathology, which is studied; Training of professional medical liability, the ability to properly assess objective methods research arm, forearm and hand, the significance of these studies for the legal, psychological and professional rehabilitation of the patient.

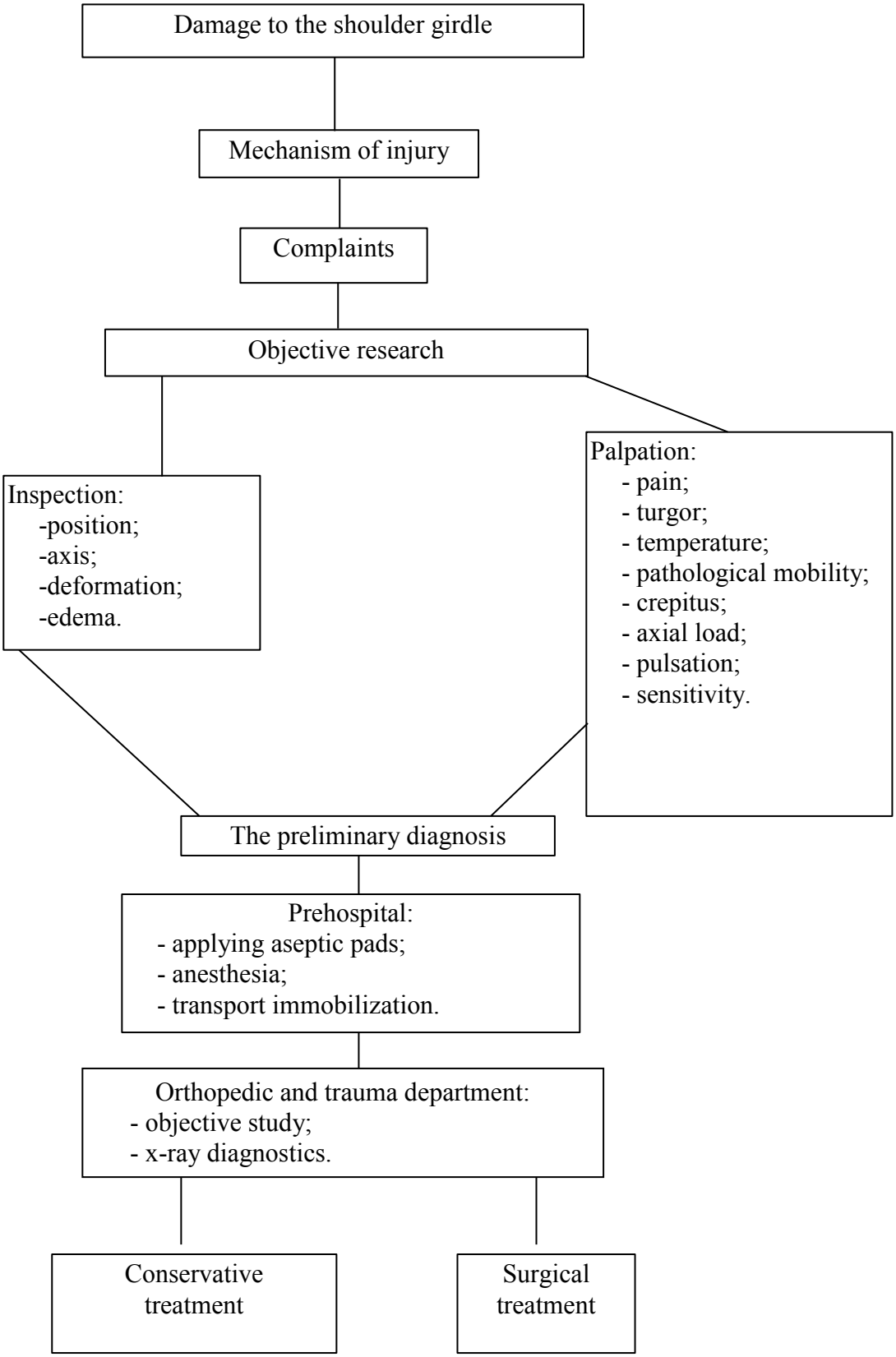
- to know:

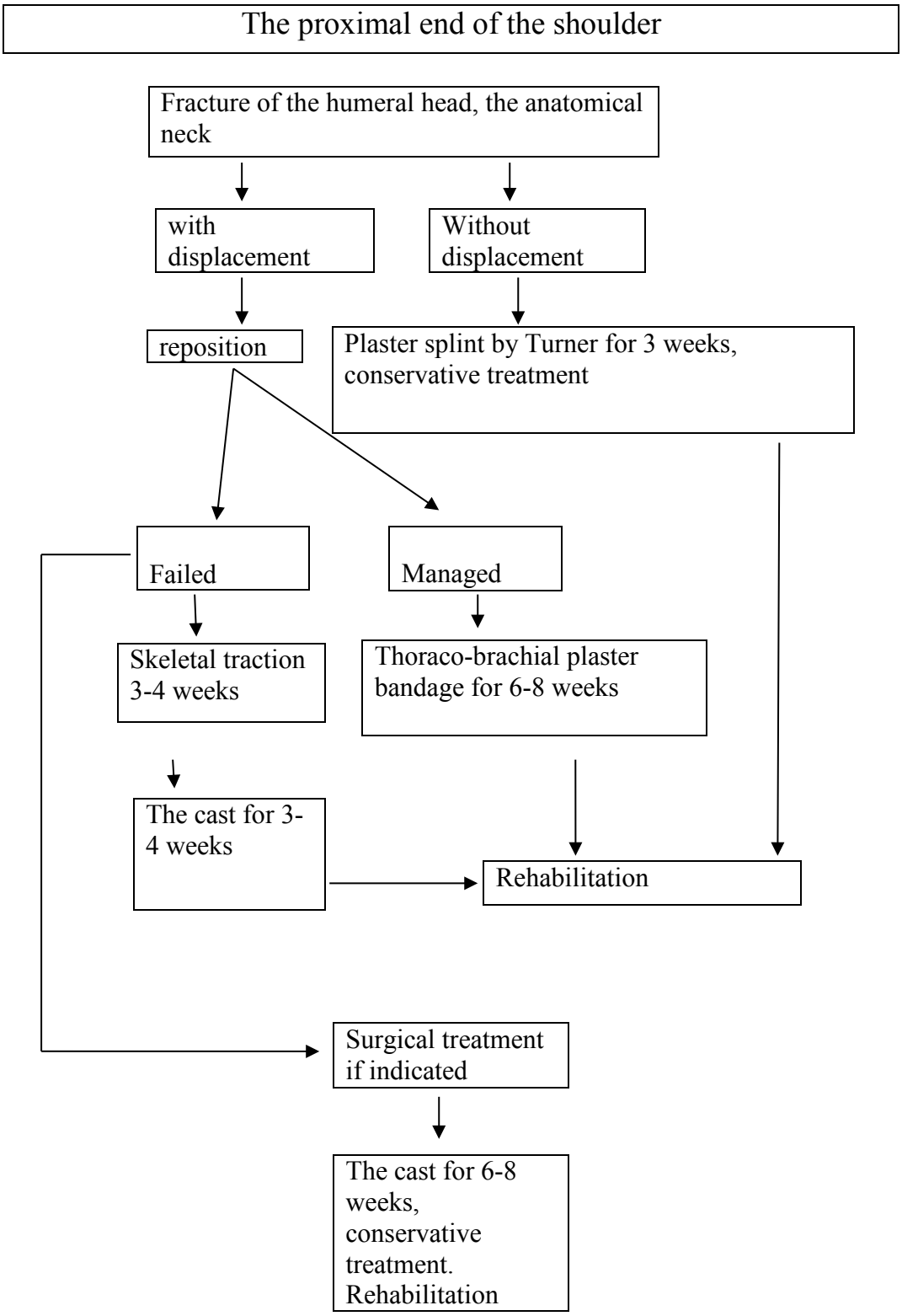
1. Mehanogenez upper limb fractures.
2. Significant clinical signs of shoulder fractures, forearm and hand.
3. Radiographic signs of shoulder fractures, forearm and hand.
4. Classification of shoulder injuries, forearm and hand.
5. Modern methods of treatment of injuries of the bones of the upper limb.
6. Terms of immobilization and disability in these fractures.
7. Complications of upper limb injuries, prevention and treatment.
8. Principles of medical, social and occupational rehabilitation.

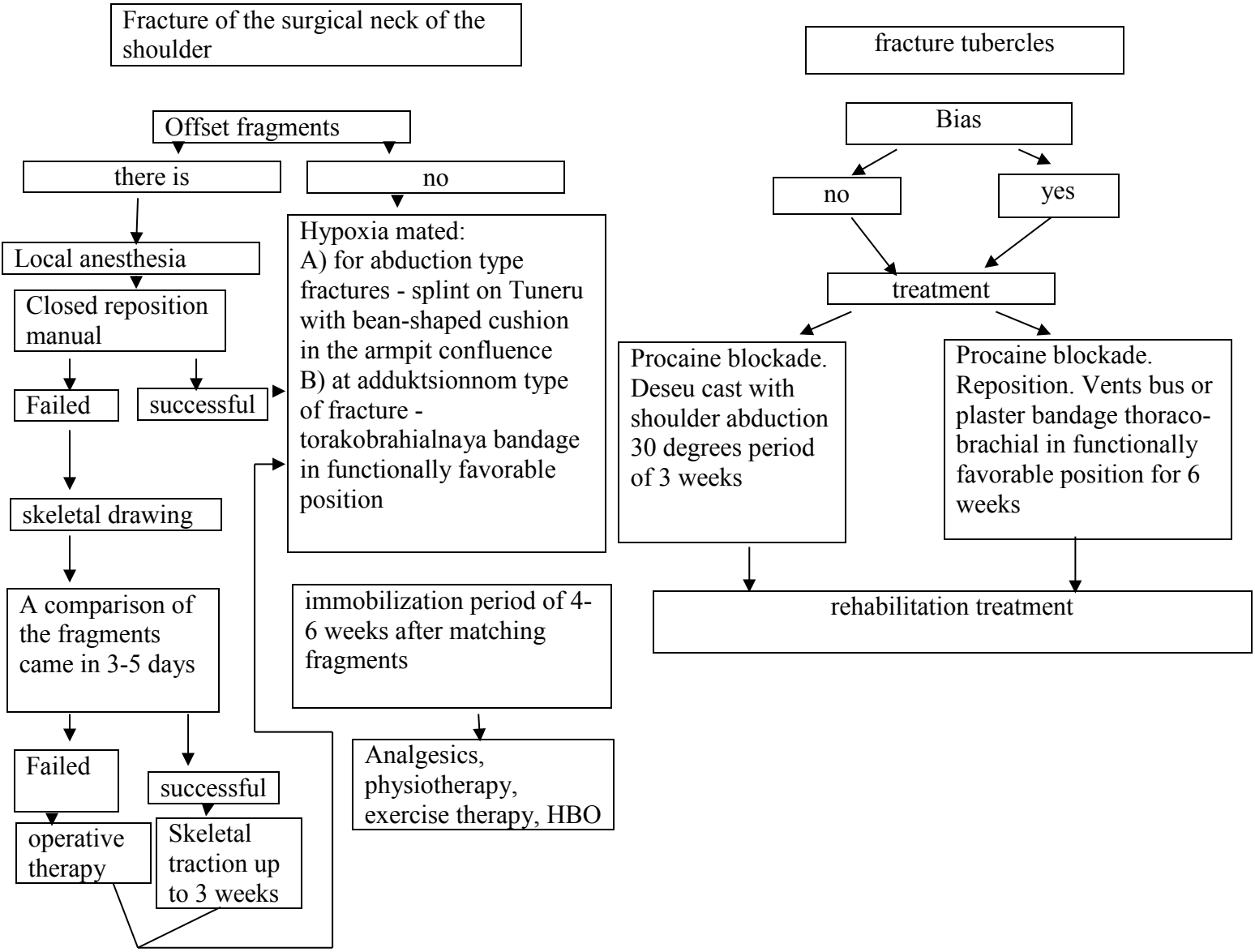
- be able to*:*

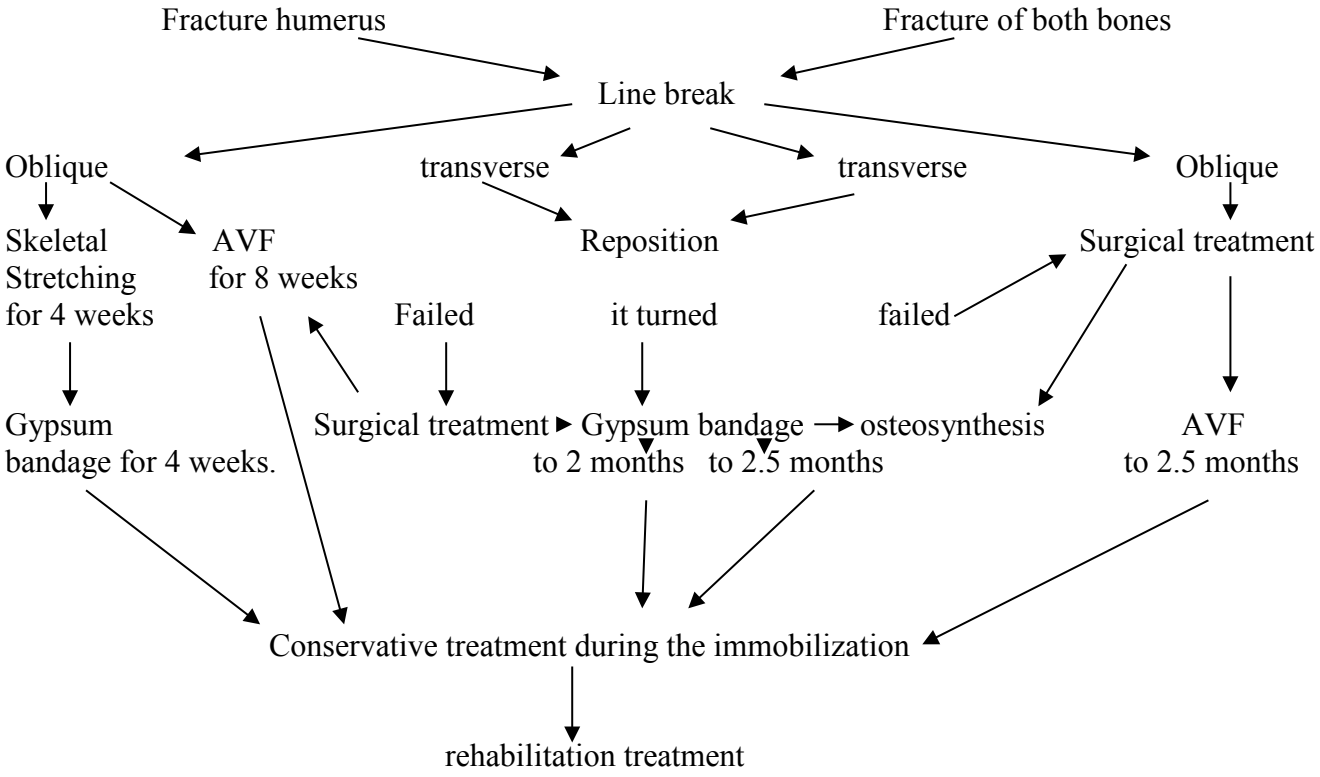
1. Clinically and radiographically to detect signs of damage to the bones, joints, tendons, ligaments, muscles, blood vessels and nerves of the upper limb.
2. To provide first medical aid in data damage (fracture site anesthesia, application of the transport and treatment of immobilization).
3. To determine the indications for the choice of treatment.
4. Assess the condition of the upper limb in a cast.

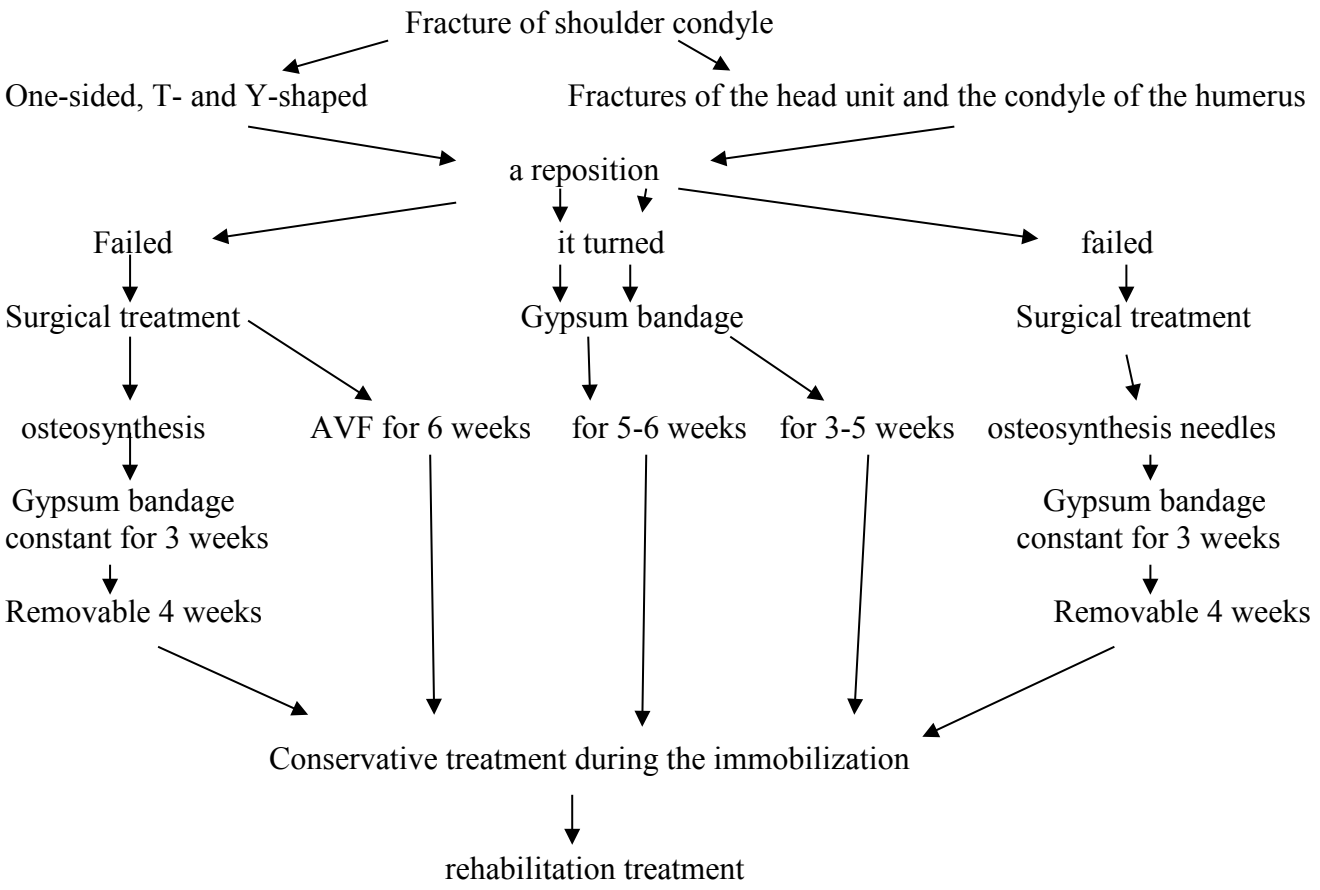
Basic concepts:




The proximal end of the shoulder
Fracture of the humeral head, the anatomical neck
with displacement
Without displacement
reposition
Plaster splint by Turner for 3 weeks, conservative treatment
Failed
Managed
Skeletal traction 3-4 weeks
Thoraco-brachial plaster bandage for 6-8 weeks
The cast for 3-4 weeks
Rehabilitation
Surgical treatment if indicated
The cast for 6-8 weeks, conservative treatment. Rehabilitation


Fracture of the surgical neck of the shoulder
Offset fragments
there is
no
Local anesthesia
Closed reposition manual
Failed
successful
skeletal drawing
A comparison of the fragments came in 3-5 days
Failed
successful
operative therapy
Skeletal traction up to 3 weeks
Hypoxia mated:
A) for abduction type fractures - splint on Tuneru with bean-shaped cushion in the armpit confluence
B) at adduktsionnom type of fracture - torakobrahialnaya bandage in functionally favorable position
immobilization period of 4-6 weeks after matching fragments
Analgesics, physiotherapy, exercise therapy, HBO
fracture tubercles
Bias
no
yes
treatment
Procaine blockade. Deseu cast with shoulder abduction 30 degrees period of 3 weeks
Procaine blockade. Reposition. Vents bus or plaster bandage thoraco-brachial in functionally favorable position for 6 weeks
rehabilitation treatment


Fracture humerus
Fracture of both bones
Line break
Oblique
transverse
transverse
Oblique
Skeletal Stretching for 4 weeks
AVF for 8 weeks
Reposition
Surgical treatment
Failed
it turned
failed
Gypsum bandage for 4 weeks.
Surgical treatment
Gypsum bandage to 2 months
osteosynthesis to 2.5 months
AVF to 2.5 months
Conservative treatment during the immobilization
rehabilitation treatment


Fracture of shoulder condyle
One-sided, T- and Y-shaped
Fractures of the head unit and the condyle of the humerus
a reposition
Failed
it turned
failed
Surgical treatment
Gypsum bandage
Surgical treatment
osteosynthesis
AVF for 6 weeks
for 5-6 weeks
for 3-5 weeks
osteosynthesis needles
Gypsum bandage constant for 3 weeks
Gypsum bandage constant for 3 weeks
Removable 4 weeks
Removable 4 weeks
Conservative treatment during the immobilization
rehabilitation treatment

Equipment: laptop, multimedia presentation on the subject of practical training, educational videos.

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.) - not foreseen.

3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

a) Oral survey, conversation, collective discussion and discussion on the subject of the lesson;

b) List of educational practical tasks that must be completed during practical classes: based on the proposed clinical situations:

A. Self-assessment initial level of knowledge, skills.

Test 1.

On examination, the patient with an injury of the shoulder joint doctor said sharply limiting diversion at an external rotation of the shoulder and suspected bone damage in the area of attachment to the external rotators of the humerus.

What damage is most likely?

A. The head of the humerus

B. Small tubercle of the humerus

C. Large tubercle of the humerus

D. Surgical neck of the humerus

E. metaphyseal humerus (Correct answer - C)

Test 2.

A patient suspected of having an open fracture of the diaphysis of the humerus with a small bleeding wound in the middle third of the shoulder against the backdrop of

significant swelling limbs. He complained of severe pain and inability to hand movements at shoulder palpation determined crepitus. Which set of symptoms is among the pathognomonic for fracture?

A. Swelling

B. Severe pain

C. Violation of limb function

D. Bleeding

E. Crepitus (Correct answer - E)

Test 3.

A patient with a closed fracture of the lower third of the diaphysis of the humerus found no active brush extension and retraction 1 finger. Which presumably damaged nerves in the patient?

A. median

B. Ray

C. Elbow

D. Musculocutaneous

E. All of the above (correct answer - In)

A. Questions for self-control

1. The classification of fractures of the proximal humerus and forearm.
2. Classification of diaphyseal fractures of the arm and forearm.
3. The classification of fractures of the distal shoulder and forearm.
4. The classification of hand fractures.
5. The characteristic clinical symptoms of bone injuries of the upper limb.
6. Radiographic signs of bone injuries of the upper limb.
7. Modern methods of treatment of upper limb fractures.
8. Complications in the treatment of bone injuries of the upper limb.
9. Immobilization Terms and disability in the treatment of injuries of the upper limb bones.

C. Tests for self-control with the standards of answers

Test №1. Patient K. fell allotted hand, felt a sharp pain in the right shoulder joint. On examination, the patient in the area of the shoulder joint swelling, extensive hematoma on the inner surface of the shoulder and the outer surface of the anterior thorax. On palpation the pain, shoulder head is stationary during rotational movements hands. Active movement in his hand missing. Diagnose.

A. Anterior shoulder dislocation

B. Posterior dislocation of the shoulder

C. Fracture of the surgical neck of the shoulder

D. Contusion of shoulder joint

E. Fracture of the diaphysis of shoulder (Correct answer - C)

Test №2. The patient came with primary traumatic shoulder dislocation. What immobilization period should be at this damage?

A. 3 days

B. 7 days

C. 10 days

D. 21 days

E. 1 month (Correct answer - D)

Test №3. Patient A., 35 years old, complains of severe pain in the shoulder joint, the impossibility of movement in it. The circumstances of the injury: fell on outstretched hand and abstracted. On examination: the left hand is reserved, the patient holds her right hand. The shoulder belt on the left is omitted, head tilted to the left. Determined retraction of the deltoid muscle. Under the skin is clearly contoured acromion process. Active movements are impossible, passive - springy and sharply painful. Diagnose.

A Fracture of the clavicle acromion process

B. Fracture of the surgical neck of the humerus

C. Dislocated Shoulder

D. Fracture of the anatomical neck of the humerus

E. Fracture of the acromial end of the clavicle (Correct answer - C)

Test № 4. The clinic delivered a patient D., 56 years old, with complaints of pain in the right shoulder joint. Trauma from a fall with an emphasis on a bent arm at the elbow. On examination: the hand is given to the chest wall and is supported by the other, the right shoulder joint is increased in size, its contours are smoothed. soft tissue retraction in the humeral head no. At palpation pain in the shoulder joint, and crepitus. The load on the axis of the limb causes increased pain in the shoulder joint. No Active movements Passive movements of the shoulder joint is severely limited because of the pain. Put the preliminary diagnosis.

A. Fracture of the acromion process of the blade

B. Fracture of the blade body

C. Fracture of the surgical neck of the humerus

D. Joint Contusion

E. Shoulder Dislocation (Correct answer - C)

Test №5. The patient X., 52 years old, complains of pain in the right shoulder joint, limiting feature in it. Trauma from a fall with an emphasis on a straightened arm. An examination of the patient revealed impacted fracture of the surgical neck of the humerus with satisfactory standing bone fragments. What treatment is indicated for patients?

A. Skeletal traction

B. The plaster cast

C. Osteosynthesis with plate

D. Transosseous osteosynthesis

E. Intramedullary osteosynthesis (Correct answer - B)

Algorithm transport immobilization with shoulder injury

1. Start stair rail on yourself or a healthy upper limb affected (if his condition allows) from the fingertips to healthy blades.
2. Bend the elbow at an angle of 90º; brush set in a position of pronation.
3. Locking roller outlet in the armpit of the damaged limb.
4. Place the affected limb on the bus.

5. Fix the ends of the bandage tires together like a "string of onions."

6. Finally, fix the bus bandages to the limbs, trunk and shoulder girdle.

Algorithm to stop external bleeding

if humerus is damaged

1) Finger pressing (general):

- Determination of the point of the finger pressing projection at the cross, with the subject line of the artery portion bones;
- Rational laying of fingers to effectively clamping the artery with the least effort;
- Adequate application of the vector finger pressure.

2) Finger pressing the brachial artery:

- The projection line of the brachial artery is carried out from the deepest point of the armpit to the middle of the distance between the medial epicondyle of the humerus and the tendon of the biceps.
- Finger pressing can be performed in the B-, C-, and the lower third of the shoulder

3) The imposition of the harness.

The orienting map for independent work with literature according to the

№	Main tasks	Instructions	Answers
1	Etiology	Name the basic etiological factors of damage to the bones of the upper limb	
2	Clinic	Create a classification of clinical manifestations of various injuries of the shoulder, forearm and hand.	
3	Diagnostics	Post a list of the main methods of diagnostics of damages of bones of the upper limb.	
4	differential diagnosis	Fill in the table of differential diagnosis of bone injuries of the upper limb.	
5	Treatment	Create a scheme of treatment of injuries of the upper limb bones.	

Requirements for work results, including design: the written work must be written or printed, have a neat appearance, the date, topic, task number, name of the performer must be indicated at the beginning, the text must be legible, structured;

Summing up: announcement of grades based on the results of the lesson. The grade for one practical lesson is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

List of recommended literature:

Basic:

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Practical class 5.

Topic: «*DIAGNOSTICS AND TREATMENT OF LOWER LIMB INJURIES*» − ***6 hours***

Goal: To teach students methods of diagnosis and medical care of lower limb`s bone fractures; to introduce the main methods of treatment of typical hip, shin and foot injuries in the hospital and at outpatient settings. The formation of a highly professional physician, who is well oriented in matters of the hip, shin and foot bone fractures as a person with deep knowledges of clinical, anatomic and radiographic features of studied pathology. Education of professional medical responsibility; correct assessment`s skills of research`s objective methods of hip, shin and foot; the significance of these studies for the law, psychological and professional rehabilitation of the patient.

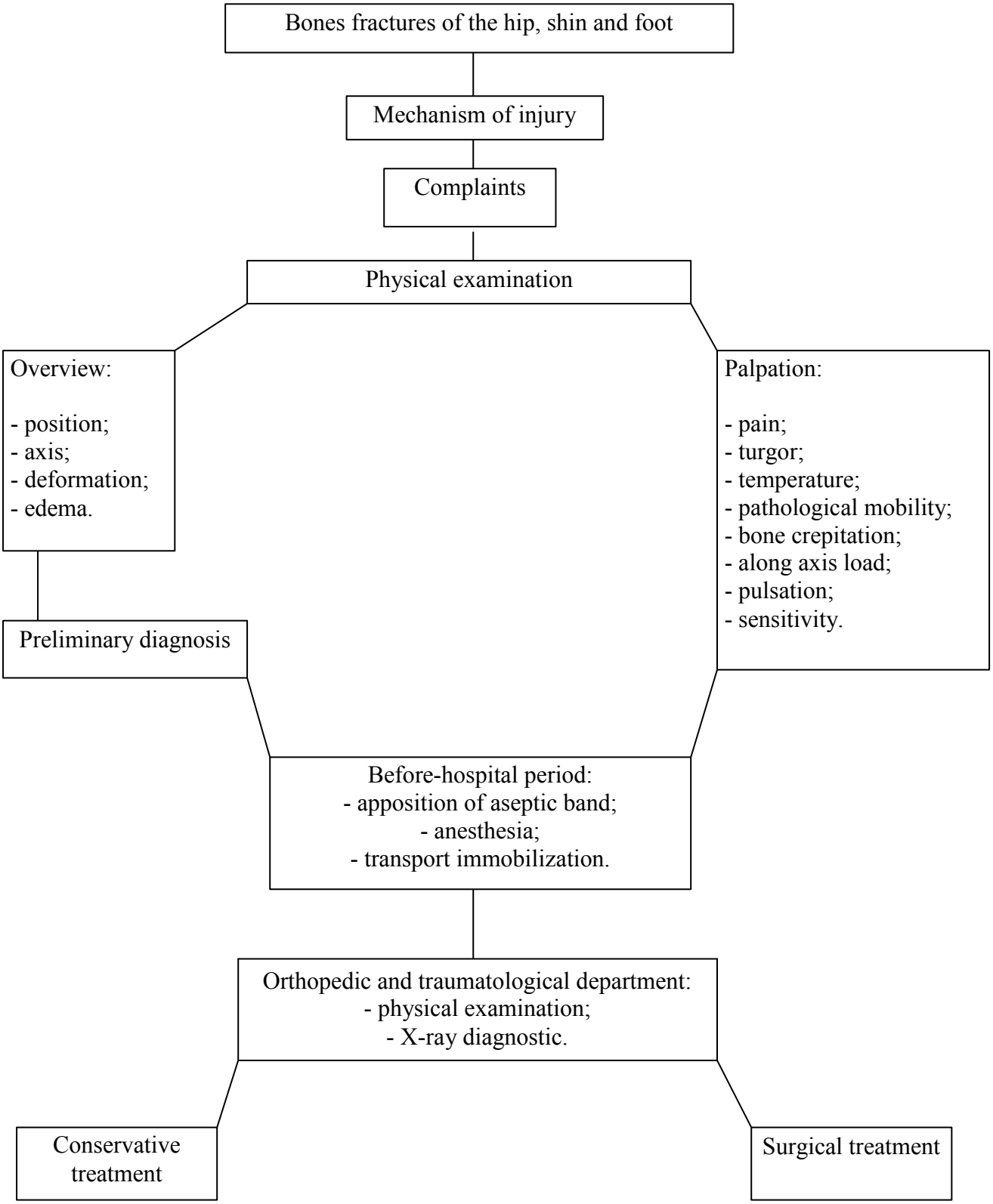
- to know:

1. Genesis of lower limb`s bone fractures.
2. Reliable clinical signs of hip, shin and foot fractures.
3. Radiographic signs of hip, shin and foot fractures.
4. Classification of hip, shin and foot injuries.
5. Modern methods of treatment of the lower limb bones injuries.
6. Terms of immobilization and disability at these fractures.
7. Complications of lower limb`s injuries, prophylaxis and treatment.
8. Principles of medical, social and labor rehabilitation.

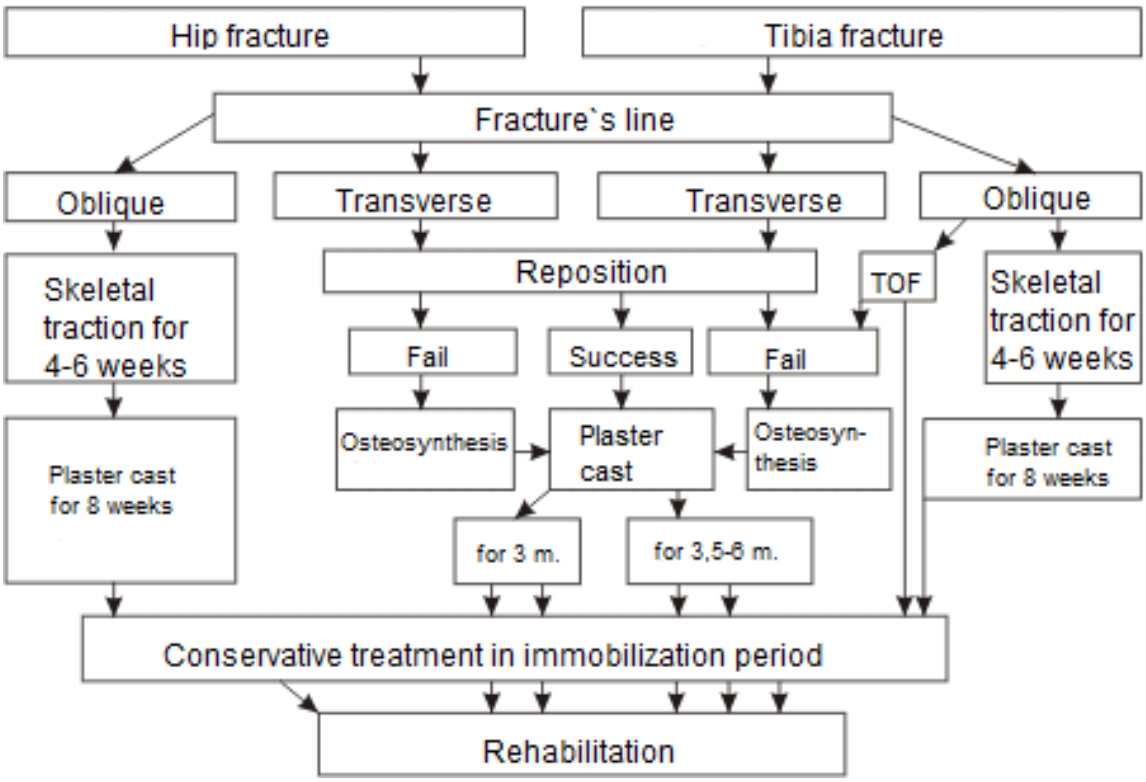
- be able to:

1. To detect clinically and radiographically the damage`s signs of the bones, joints, tendons, ligaments, muscles, blood vessels and nerves of the lower limb.
2. To provide first medical aid at these damages (fracture area anesthesia, application of the transport and medical immobilization).
3. To determine the indications for different types of treatment.
4. Assess the condition of the limb in a plaster cast and on the skeletal traction.

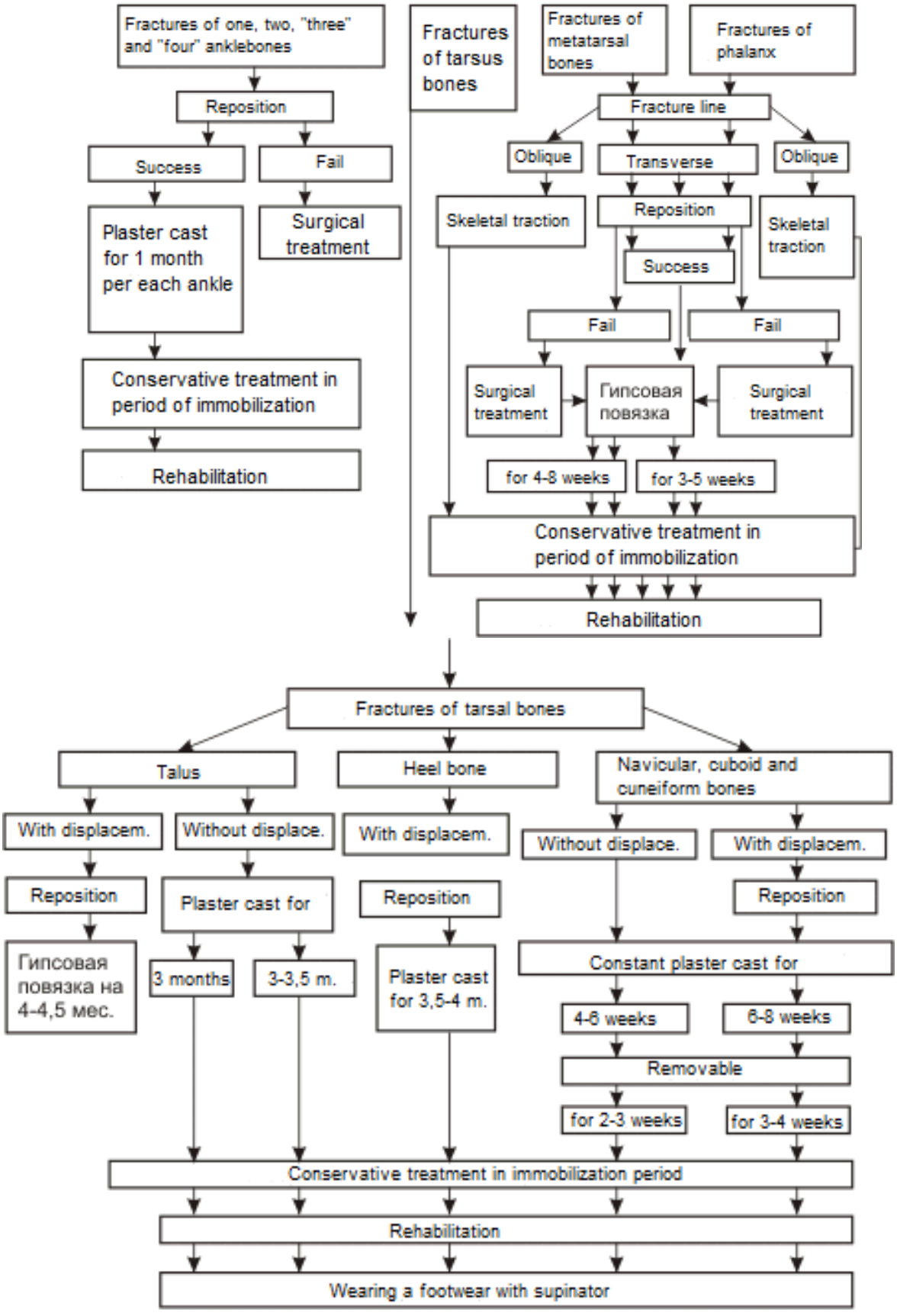
Basic concepts:



Principles of treatment at fractures of femur`s and tibia`s bones with displacement of fragments



Principles of treatment at ankle and foot bones fractures with displacement of fragments



Equipment: laptop, multimedia presentation on the subject of practical training, educational videos.

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.) - not foreseen.

3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

a) Oral survey, conversation, collective discussion and discussion on the subject of the lesson;

b) List of educational practical tasks that must be completed during practical classes: based on the proposed clinical situations:

A. Self-test tasks for basic knowledge level and skills.

1. Reliable signs of shin`s bone fractures:

A. Edema, subcutaneous hemorrhage;

B. Deformation;

S. Crepitation of fragments;

D. Deformation of the limb`s axis;

E. Dysfunction.

2. Restrictions of the joint`s movements can be everything, except:

A. Ankylosis;

B. Contracture;

S. Stiff;

D. Pathological mobility;

E. None of the above.

3. The patient was taken to the hospital with complaints of pain in the right ankle. On examination of patient there was found Dupuytren`s fracture. What is the mechanism of such injury?

A. Supination of the foot;

B. A direct trauma;

S. Pronation of the foot;

D. The load along the axis with dorsiflexion;

E. The load along the axis with the plantar foot flexion.

4. The patient brought to the emergency room with complaints of pain in his left ankle, which increases when he tries to move or load the limb. At examination of the patient is revealed a closed fracture of the internal malleolus without displacement. What position should have the foot at immobilization with plaster cast?

A. The position of pronation;

B. The position of plantar flexion;

C. At an angle of 90 °;

D. In the position of supination;

E. In the position of dorsiflexion.

5. The patient was taken to the emergency room after the car accident. At examination was found an open splintered fracture of both shin`s bones in the middle one-third. What method of treatment is most indicated?

A. Skeletal traction;

B. The plaster cast;

C. Extramedullary osteosynthesis;

D. Transosseous osteosynthesis;

E. Intramedullary osteosynthesis.

B. Questions for self-control.

1. The classification of proximal femur`s and shin`s fractures.
2. Classification of diaphysis fractures of the femur and shin.
3. The classification of distal femur`s and shin`s fractures.

4. The classification of foot fractures.
5. The characteristic clinical symptoms of lower limb fractures.
6. X-ray signs of lower limb fractures.
7. Modern methods of treatment of lower limb fractures.
8. Complications at the treatment of lower limb.
9. Terms of immobilization and disability at the treatment lower limb fractures.

C. Tests for self-control with correct answers.

1. Possible complications after using of circular plaster cast:

A. Closed fracture, in which there is a danger of skin perforation;

B. Interposition of soft tissue between the fragments;.

C. Compression of the neurovascular bundle with bone fragments;

D. The appearance of bedsores;

E. Compression vessels that nourish the tissues. (correct answer is E)

2. Traumatological patients should be referred to the State Disability Evaluation Service:

A. After 1 month;

B. After 2 month;

C. After 3 months;

D. After 4 months;

E. After 5 months. (correct answer is D)

3. Dupuytren's fracture is:

A. Isolated fracture of the medial malleolus;

B. Isolated fracture of the lateral malleolus;

C. Fracture of the medial ankle and fibula in the lower third;

D. Fracture of both ankles with syndesmosis rupture and subluxation of the foot;

E. Fracture of the medial malleolus and the fibula in the middle third. (correct answer is D)

4. Patient P., 42 years old, is taken to the hospital with complaints of pain in the right shin. Injury as a result of car`s bumper hitting. At examination is determined by a closed transverse fracture of the upper one-third of the right tibia without displacement.
What method of treatment for this fracture is the most appropriate?

A. Transosseous osteosynthesis;

B. Skeletal traction;

C. Fixing with plaster cast;

D. Osteosynthesis;

E. Intramedullar fixation. (Correct answer is C)

5. Patient K., 45 years old, was admitted to the traumatological department with closed fracture of the medial malleolus with displacement and subluxation of the foot outwards. What position of the foot should be in a cast after reposition?

A. Dorsiflexion;

B. At the angle 90 °;

C. Supination;

D. Plantar flexion;

E. Pronation. (Correct answer is C)

6. The patient X., 34 years old, was taken to the emergency room with complaints of pain that increases with the load on the limb and restricting of movements in the right ankle joint. At examination was revealed closed damage of the lateral side ankle ligaments.

7. At what mechanism of injury occurs this damage?

A. Pronation of the foot;

B. Supination of the foot;

S. Load along the axis with plantar flexion of the foot;

D. Load along the axis with dorsiflexion;

E. A direct trauma. (Correct answer is B)

8. Patient G., 32 years old, has stumbled and sprained foot inside. At examination in the medial malleolus was found the pronounced swelling. Active and passive motion in the ankle joint are painful, at palpation sharp pain is determined in the medial and lateral

ankle, the foot is deformed inwards. What damage is characterized with such mechanism of injury?

A. Fracture of Malgen;

B. Fracture of Dupuytren;

C. Fracture of Pott;

D. Fracture of Desto;

E. For all above. (Correct answer is A)

The orienting map for independent work with literature according to the

№	Main tasks	Guidelines	Answers
1.	Etiology	To name main etiological factors of lower limb`s injuries.	
2.	Clinical symptoms	To list the classification of bone fractures.	
3.	Diagnostic	To name the main clinical symptoms of hip, shin and foot fractures.	
4.	Differential diagnostic	To write the diff. diagnostic`s table of lower limb`s injuries.	
5.	Treatment	To build the treatment`s scheme of lower limb`s injuries.	

Requirements for work results, including design: the written work must be written or printed, have a neat appearance, the date, topic, task number, name of the performer must be indicated at the beginning, the text must be legible, structured;

Summing up: announcement of grades based on the results of the lesson. The grade for one practical lesson is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

List of recommended literature:

Basic:

1.V.F.Venger, V.V.Serdyuk Rashed Mochammad Traumatology and orthopedics: Compilation of methodical developments to the practical studies on traumatology and

orthopedics including the materials for self-training of students of medical institutes of higher education. – Odessa: Print, 2004. – 248 p.

2. Golka G.G., Burianov O.A., Klimovitskiy V.G. Traumatology and orthopedics: textbook for students of higher medical educational institutions : transl. from. ukr. lang. – Vinnytsia : Nova Knyha, 2018. – 400 p.

Practical class 6.

Topic: *«DIAGNOSTICS AND TREATMENT OF SPINE AND PELVIS INJURIES»* − **6 *hours***

Goal: To teach students methods of diagnosis and emergency care at damages of pelvis and spine; to introduce main methods of treatment of typical pelvic and vertebral fractures in the hospital and ambulatory conditions. Formation of highly qualified physician, which is well-versed in questions of pelvic and vertebral fractures based on profound knowledges in clinical, anatomic, radiological features of studied pathology. Education of physician`s professional responsibility of, ability of right interpretation of spine and pelvis survey`s data, and meaning of this data for law, psycho and professional rehabilitation of patient.

- to know:

1. Mechanism of pelvis and spine fractures.
2. Absolute clinical signs of pelvis and spine fractures.
3. X-ray signs of pelvis and spine fractures.
4. Classification of pelvis and spine damages.
5. Modern methods of treatment at pelvis and spine damages.
6. Terms of immobilization and incapacity after these fractures.
7. Complications at pelvis and spine damages, their prevention and treatment.
8. Principles of medical, social and working rehabilitation.

- be able to:

1. Clinically and radiologically to determine the signs of pelvis and spine damages.
2. Give first aid to the patient with these damages (analgesia of fracture`s area, imposition of immobilization).
3. Determine the incautions in choosing of treatment`s methods
4. Explain the principles of possible complications at spine and pelvis fractures.
5. Determine the terms of patient`s incapacity depending from severity and localization of spine and pelvis fractures.

Basic concepts:

In recent years, the number of vertebral fractures in age from 11 to 40 years in car accidents increased. Ignoring the well-developed vertebral surgery rates of disability (63.9%) and mortality from fractures with spinal cord injury, especially cervical remain high. Based on anatomical and functional features stable and unstable fractures of the spine are distinguished.

Stable fractures are such fractures, at which the back section of the spine is not damaged, means, the arches and the articular processes are not damaged, and therefore no risk of additional displacement of the vertebrae fragments and compression of the spinal cord.

Unstable fractures of the vertebrae tend to the additional fragments displacement, due to fracture of arches or articular processes - damage to the back "pillar" complex. That's why for victims with unstable fractures of the vertebrae one-stage reduction of Blair and Davis is contraindicated.

At explosive fractures of vertebral bodies in the young victims preferred method of treatment is anterior spinal fusion, and in older age -functional method of treatment by VV Gorinevskoy. Spinal patients that have spinal cord injury are shown provision with prosthetic products and social rehabilitation, taking into accounts the professional capabilities and queries.

Treatment of patients with spinal cord injury requires a thoughtful and differentiated approach in choosing of a method, which depends from the location, nature and severity of injuries. The main target of treatment should be optimal correction of traumatic deformities and stabilization of the spine. This can be done by conservative and operative methods.

Mechanism of pelvic fractures.

Fractures of pelvis appear after the action of deforming force in sagittal, frontal, oblique and vertical directions. Typical places of pelvic fractures: sacroiliac joint, both branches of pubic bones, ischial bones and sacrum along the line if interpelvic processes.

Classification of pelvic fractures:

Isolated, multiple, combined fractures of pelvis. There are classifications according to the signs: mechanism of injury, anatomical and clinical signs:

- simple (isolated, unilateral, bilateral fractures of frontal section of pelvis);
- complex (diagonal, fractures of acetabulum without dislocation of the hip);
- complicated (open fractures, fractures of acetabulum with dislocation of the hip, fractures with rupture of symphysis, and also fractures with injuries of internal organs, vessels, nerves).

Diagnostic: it is necessary to pay special attention to the general condition of the patient (pulse, blood pressure, breath). To exclude a state of shock. Presence of pelvic deformations, the asymmetry of the front upper spines and shortening of the lower limbs in the presence of the offset of pelvis one half, presence of hemorrhages (they are common for several pelvic fractures), local pain at palpation, Verneuil`s symptom (pain when compressing the iliac bones of the pelvis), Larrey's symptom (pain at a dilution of the iliac bones of the pelvis). Reverse symptoms (for patient it is easier to go moving the feet back) at isolated fractures of anterior superior spine, a symptom of "stuck heel" (the inability to raise the straightened leg on the side of the damaged pelvis). The diagnosis should be confirmed with X-ray.

Treatment of pelvic fractures: first need to perform a pelvic anesthesia (intrapelvic anesthesia by Shkolnikov-Selivanov). At the presence of shock immediately to perform anti-shock measures (anesthesia, compensation of the blood loss, etc.). At the presence of a simple fractures without displacement of fragments: the patient is placed in the bed in position of N. Volkovich, with isolated fractures of the pubic and ischial bones, with isolated fractures of the wing of the ilium - open hammock, with uni- and bilateral fractures of the pubic and ischial bones, patient is placed in a hammock with a cuff or adhesive traction for the shin. At fractures of the acetabulum without hip dislocation - cuff traction. At vertical and diagonal fractures with displacement of fragments - skeletal traction for supracondylar region of the femur (12-14 kg) to eliminate pelvic displacement upwards, and then, without removing the traction, to put the patient in a hammock.

At the presence of complicated pelvic fractures, as at the complex, it is necessary

to take out the patient from a state of shock. Then, if the fractures are opened, primary debridement, reposition and fixation of bone fragments in the wound, fractures with rupture of the symphysis – to laid the patient in a hammock with cross hanging; with acetabular fractures with dislocation of femoral head - the central (single reduction, skeletal traction for supracondylar region of the femur and of the greater trochanter, in fractures with damage to the pelvic organs – at the same time with surgery on damaged organs, open reduction of displaced fragments of the pelvis. Surgical treatment of pelvic fractures is shown: at the opened isolated fractures with displacement, at a double fracture of the pelvis anterior half ring with their rotation in the pelvic cavity; at vertical and diagonal fractures, rupture of the symphysis with differences, at fractures of the acetabulum with hip dislocation, when conservative treatment cannot be applied, as well as at fractures, that have grown together properly and fracture-dislocations.

Equipment: laptop, multimedia presentation on the subject of practical training, educational videos.

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.) - not foreseen.

3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

a) Oral survey, conversation, collective discussion and discussion on the subject of the lesson;

b) List of educational practical tasks that must be completed during practical classes: based on the proposed clinical situations:

A. Self-test tasks for basic knowledge level and skills.

1. How many vertebrae there are in thoracic segment?

A. 11;

B. 9;

C. 10;

D. 8;

+E. 12.

2. Fracture of the odontoid process (tooth) of the 2nd cervical vertebra diagnosed by X-ray examination in:

A. Lateral projection;

B. Frontal projection through a closed mouth;

+C. Frontal projections through the open mouth;

Д. Frontal projections by excessive bending of the neck;

Э. Frontal projection with excessive straightening the neck.

3. One-step reposition is performed at compression fractures of vertebrae bodies:

A. With neurological disorders;

+B. Without neurological disorders.

4. Strongest "power core" of a vertebra is:

+A. Vertebral arch;

B. Vertebral body.

5. In all the vertebrae are distinguished:

A. Spinous process, the arch and the body;

B. Transverse, articular and spinous processes, body;

C. The body, neck, processes;

+D. Body, arch and processes;

E. The body, the arch and intervertebral disc.

B. Questions for self-control.

1. Classification of spine fractures.
2. Classification of pelvic fractures.
3. Clinical signs of spine damages.
4. Clinical signs of pelvic damages.

5. Radiological signs of spinal and pelvic fractures.
6. Modern methods of treatment at spine and pelvic fractures.
7. Complications at treatment of spine and pelvic fractures.
8. Terms of immobilization and incapacity after spine and pelvic fractures.
9. Social and work rehabilitation after spine and pelvic damages.

C. Tests for self-control with correct answers.

1. All cervical vertebras are characterized by:

A. Absence of spinous process;

B. Presence of articular sites and the two arcs;

C. Presence of the odontoid process;

+D. Presence of hole in the transverse processes;

E. Absence of intervertebral disk.

2. Sacrum is divided into following parts:

A. Pelvic and dorsal surface;

B. Sacral crest and transverse lines;

+C. Base, top and lateral parts;

D. Sacral horns, cape and slot.

3. Patient 36 y.o. get spinal trauma with fallen out box. The patient was bent like a penknife. There was sharp pain in lumbar segment, and the patient could not move by himself. At survey in hospital there was diagnosed uncomplicated compression fracture of lumbar first vertebrae in 1 stage of severity. What method of treatment should be used?

A. Extension method;

+B. Functional method;

C. Fixation method;

D. Operative method;

E. Complex method.

4. What method of treatment should not be used at fracture-dislocation of 6-th cervical vertebrae with fracture of mandible?

A. Skeletal traction for the parietal mounds;

B. Skeletal traction for the zygomatic arches;

+C. Skeletal traction for Gleason`s loop;

D. Immobilization of the spine with Cramer`s tire;

E. Fixation collar.

5. Decisive in the diagnosis of vertebral fractures is:

A. Local pain;

B. Palpation of spinous processes;

C. Push along the axis of spine;

Д. Disorder of pelvic organs;

+E. X-ray data (especially in the lateral projection)

6. In patient W. 36 y.o., that is being in hospital with diagnosis of uncomplicated compression fracture of 1st lumbar vertebrae in 2nd stage treated by functional method, appeared pain in abdomen. At survey: the stomach is limited, takes part in the breathing, abstention tension of abdominal muscles, palpation - the pain of diffuse character, mild symptoms of peritoneal irritation. Clinical and biochemical blood indicators are normal. What is the cause of abdominal pain?

A. Character of spinal injury;

+B. Retroperitoneal hematoma;

C. Radicular syndrome;

D. Damage of abdominal organs;

E. Inflammation of abdominal organs.

7. Patient T., 30 y.o., was taken to the hospital after car-accident. He complains on pain in the cervical part of spine, losing of sensitivity from level of forearm, absence of movements of upper and lower limbs. At survey of patient was identified closed complicated dislocation of 3rd cervical vertebrae. What method of treatment is shown to the patient?

A. Extension;

+B. Operative;

C. Fixation;

D. Functional;

E. Complex.

8. Patient I., 42 y.o. was delivered to the hospital with complaints on pain in the neck area, absence of movements of upper limbs. Trauma is due to hit the head on the bottom during diving. At survey was identified uncomplicated fracture of articular processes of 5^{th} cervical vertebrae with displacement backwards. What method of treatment is shown to the patient?

A. Extension;

+B. Functional;

C. Fixation;

D. Operative;

E. Complex.

9. Patient 24 years old fell down on foots from 3^{rd} floor. Felt sharp pain in the spine. Couldn't stand up by himself. At survey is identified flatness of lordosis in the lumbar area, tension of the back extensor muscle. Axis load on spine leads to pain increasing. Palpation of 12^{th} thoracic – 3^{rd} lumbar vertebras calls pain with pulling up unbent legs. But there is no injury of spinal cord. The compression fracture of 2^{nd} lumbar vertebrae in 1^{st} stage is identified. What amount of first aid should be done on pre-hospital stage?

A. One-step reclination and fixation with corset;

B. Traction with reclination;

C. Functional treatment after Drewing-Gorinevskaya;

D. Surgical treatment;

+E. Immobilization.

10. Patient 32 years old was brought to the hospital with complaints on pain in the neck area. Trauma was as a result of sharp hyperextension in the cervical segment of spine. At survey was identified fracture of spinous process of 7^{th} cervical vertebrae without displacement. What method of treatment is shown for the patient?

+A. Extension;

B. Functional;

C. Fixation;

Д. Surgical;

E. Complex.

The orienting map for independent work with literature according to the

№	Main tasks	Guidelines	Answers
1	Etiology	To name the mail etiological factors of spine and pelvis damages, classification and mechanism of trauma.	
2	Clinical symptoms	To list the clinical symptoms of spine and pelvis damages in cervical, thoracic and lumbar segments.	
3	Diagnostic	To name the main methods of diagnostic at spine and pelvis damages, X-ray signs of cervical, thoracic and lumbar fractures.	
4	Differential diagnostic	With what damages should be differentiated the fracture of vertebral body and pelvic bones.	
5	Treatment	To name the indications to conservative and surgical treatment of spine and pelvic fractures.	

Requirements for work results, including design: the written work must be written or printed, have a neat appearance, the date, topic, task number, name of the performer must be indicated at the beginning, the text must be legible, structured;

Summing up: announcement of grades based on the results of the lesson. The grade for one practical lesson is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

List of recommended literature:

Basic:

1.V.F.Venger, V.V.Serdyuk Rashed Mochammad Traumatology and orthopedics: Compilation of methodical developments to the practical studies on traumatology and orthopedics including the materials for self-training of students of medical institutes of higher education. – Odessa: Print, 2004. – 248 p.

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Practical class 7.

Topic: *«DEGENERATIVE-DYSTROPHIC DISEASES OF THE SPINE»* **– 6 *hours***

Goal: Preview of the modern definition of clinical and radiological signs of osteochondrosis of the cervical, thoracic and lumbar spine; assign complex treatment of patients with osteochondrosis and determine the prognosis for recovery and working capacity. Formation of highly professional physician who is well-versed in matters of degenerative diseases of spine on profound knowledges of clinical, anatomic and radiographic features of pathology, which is studied; education of professional medical responsibility, skill to correct evaluation the objective research techniques of spine, the importance of these studies for the legal, psychological and professional rehabilitation of the patient.

- know:

1. Anatomy and physiology of the spine at healthy and sick person.
2. Modern views on the etiology and pathogenesis of osteochondrosis.
3. Methods of clinical examination of patients with osteochondrosis of the spine.
4. Indications for conservative and surgical methods of treatment at patients with degenerative-dystrophic diseases of the spine.

- be able to:

1. Diagnose pathology of spine in the cervical, thoracic and lumbar segments.
2. Interpret X-ray pictures of patients with osteochondrosis.
3. Formulate a preliminary and final diagnosis.
4. Justify the principles and indications for functional and combination treatments at patients with degenerative-dystrophic diseases of spine.
5. Determine the prognosis for recovery and working capacity.

Basic concepts:

According to modern concepts osteochondrosis - a degenerative-dystrophic diseases of the spine with the primary lesion of the intervertebral disc, with a variety of structurally functional impairment. In the genesis of osteochondrosis outstanding factor

is the formation of a "vicious circle" of dystrophic and degenerative changes at different levels in organization of motor segments of spine: organ, tissue, cellular and molecular.

The solution of health care tasks is possible using the methodology of a systematic approach. This involves consideration of the structure and function of the spine as a system that performs a supporting, protecting, and motor function. The main element of this system is a segment of the spine, which subsystem includes arch-processes, costovertebral and costolumbar joints, muscular and ligamentous apparatus.

Based on the biomechanical features of the spine, we can name the main subsystem that includes: the vertebral bodies and intervertebral disc connected with ligaments, which constantly receive and transmit all kinds of loads. The auxiliary subsystem includes facet joints associated with the vertebral arch, and functioning as a single joint. In the thoracic region, it also includes costovertebral and edge-lumbar joints. The main function of the subsystem is a distribution of load that exceeds the physiological norm and limitation of deformation of the intervertebral joint.

The leading factors in the influence of hierarchically constructed system of top-level on function of spine are muscles; the structural elements of this system are complex cellular-tissue structures with complex macromolecular organization.

Stage of osteochondrosis:

- intradiscal shifts of the nucleus pulposus
- protrusion of the intervertebral disc
- herniated disc.

In addition, there are the following structural functional disorders - spondylarthrosis and spinal stenosis. Clinical manifestations of degenerative lesions of the spine caused by – diskalgia, spondyloarthralgia and instability.

The instability of the spine - this is a clinical pathological condition which leading biomechanical substrate is insufficient of load capabilities, which under the influence of external loads is manifested in excess deformation, pathological movements and damage of the elements of spine.

Three forms of instability at degenerative lesions of the spine are identified - discogenic, disco-arthrogenic and disco-arthro-osteogenic.

The syndrome of discalgia is characterized by complex of clinical manifestations, which include considerable pain, neurological signs and gross myotopic reactions that lead to the functional block of spine segments. The cause of its formation are pathological changes of intervertebral discs - intradiscal shifts of nucleus pulposus, the protrusion and hernias. In this case, the development of pain is caused by irritation of endings of neck-branch of sine-vertebral nerve (mechanical and chemical nature), located in the posterior annulus of fibrous ring, posterior longitudinal ligament, the dura mater.

With the direct compression the sensitive branch of the nerve root by disc elements is formed radicular pain syndrome and related sensory, motor and trophic changes of the corresponding location.

The injury of the spine joints causes the development of spondyloarthralgia. This one is characterized by complex of typical symptoms and manifested by pain of varying strength (lumbalgia, dorsalgia), with a gradual start and random progress, which increases during the transition from rest to motion, does not decrease after a workout and a massage, followed by restriction of movements - extension and rotation.

Such a condition may be accompanied by a feeling the crunch and crackle in the spine. At the base of spondyloarthralgia lies a irritation of endings of spinal nerve medial branch.

Degenerative spinal stenosis is a form of degenerative-dystrophic lesions of the spine with characteristic clinical picture that can be caused by discogenic lesions, instability of spine segments and spondylarthrosis. Symptoms of stenosis are persistent, constantly increasing pain syndrome, alternating lameness, sensory disorders and decreasing of symptoms in a forced position of the body. pain and other neurogenic changes may be cause, as compression of the spine channel elements, so development of rumen process in the epidural space, which will be the cause a trophic elements of the spinal cord.

Equipment: laptop, multimedia presentation on the subject of practical training, educational videos.

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.) - not foreseen.

3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

a) Oral survey, conversation, collective discussion and discussion on the subject of the lesson;

b) List of educational practical tasks that must be completed during practical classes: based on the proposed clinical situations:

A. Questions for self-control.

1. What is the pathological and anatomical essence of deforming osteochondrosis, spondylosis and spondyloarthrosis?
2. What is the cause of radicular manifestations of osteochondrosis?
3. What are the main clinical manifestations of osteoarthrosis in the cervical, thoracic and lumbar spine (visceral, vegetative, radicular)?
4. What are the clinical and radiological differences between osteochondrosis and spondylosis, spondylarthrosis?
5. Explain the essence of the treatment methods that are used at osteochondrosis: a) medication, b) physical therapy, c) orthopedic d) balneology.
6. What methods of prevention are used to prevent osteoarthrosis at patients of sedentary and physical work?
7. What a pathoanatomical essence, the cause and localization of the spondylolisthesis?
8. What treatment methods are used at spondylolisthesis? Explain the essence of each method.

B. Tests for self-control with correct answers.

1. The main elements of the motor system of spine are:

A. One vertebra;

B. Two adjacent vertebrae;

C. Intervertebral disc;

+D. Two adjacent vertebrae and intervertebral disc;

E. Muscles and ligaments of the vertebrae.

2. In any vertebra there are such parts:

A. Spinous process, the arch and the body;

B. Transverse, joint and spinous processes, the body;

C. Body, neck, processes;

+D. Body, the arch and processes;

E. Body, arch and intervertebral discs.

3. The most durable "power core of vertebra" is:

A. vertebral body;

+B. the leg with arches.

4. The gap of hyaline plate of vertebrae provides assistance to:

A. Narrowing of the intervertebral space;

B. Sclerosis of locking plate;

C. Marginal growth of vertebral bodies;

+ D. Prolapse of the nucleus pulposus in sponge substance of body (hernia);

E. Compression of the intervertebral nerve root.

5. Laminectomy is used at:

A. Stenosis of the intervertebral aperture;

B. Herniated disc;

+C. Protrusion of a herniated disc in the spinal channel;

D. Subluxation in the facet joints;

E. Failure of conservative therapy.

C. Tasks for self-control with correct answers.

1. Healthy man, 42 y.o., felt a sharp pain in the lumbar region, was unable to straighten up and was taken to the hospital on a stretcher after the lifting of a bag weighing 80 kg.

At examination: tension of spine muscles - a positive sign of "tight rein", local pain in the spinous process Th5 and radiation of pain to the lower limb. Positive symptom of Lasegue. Motion in the spine are sharply limited, flattened lumbar lordosis. Decreasing of the skin sensitivity in the lateral surface of the shin and foot. The main load on the spine is accompanied with pain increasing in projection of Th4-Th5. Make preliminary diagnosis:

A. Renal colic;

B. Pseudospondylolisthesis Th4-Th5;

+C. Disc protrusion Th4-Th5;

Д. Spondylarthrosis Th4-Th5;

E. Spondiloarthralgia.

2. See the condition of the task 1. Q: What are the most informative data of radiographic examination in this patient?

A. X-ray in two projections of the lumbar spine;

B. Functional radiographic examination;

C. CT;

D. Radiographic contrast examination (discography);

+E. NMR (nuclear magnetic resonance).

3. See the condition of the task 1. Q: What treatment should be applied to the patient in case of disk protrusion of the motor segment in Th4-Th5?

A. Manual therapy;

B. Paravertebral blockade;

C. Extension of the spine;

+Д. Laminectomy and posterior spinal fusion;

E. Laminectomy.

4. Patient A., aged 40, came to the hospital complaining of pain attacks in the heart, which begins with "lumbago" in the thoracic spine of encircled character radiating in the left arm and epigastric region. At sharp movements he notes the appearance of episodes of current pain over the last three years. At examination: tension of spine muscles on the right side, increasing of spinous processes of the V-X thoracic vertebras,

as well as the appearance of a sharp pain radiating to the heart by straightening the spine. Knee and Achilles`s reflexes are slightly increased, abdominal are absent, high sensitivity in the middle thoracic vertebras. Make a preliminary diagnosis:

A. Stenocardia;

B. Pancreatitis;

C. Duodenal ulcer;

+D. Osteochondrosis of thoracic spine;

E. Stomach ulcer.

5. Patient I., 43, engineer - designer, came to the hospital complaining on pain in the cervical spine, which radiates to the left shoulder and forearm, numbness of IV and V fingers on left hand. The pain increases sharply at night time with a significant bending and unbending of the head. The patient was also worried about the increasing limitation of movements in the left shoulder. Make a preliminary diagnosis:

A. Left-sided plexitis;

B. Deforming arthrosis of shoulder joint;

+C. Humeroscapular syndrome;

D. Tumor of c5 body (or metastasis);

E. Osteoarthrosis of acromion-clavicular joint.

6. See the condition of the task 4. Q: What treatment should be used?

A. Manual therapy;

B. Medication;

C. Physiotherapy;

D. Spa treatment;

+E. Complex treatment.

The orienting map for independent work with literature according to the

№	Main tasks	Guidelines	Answers
1.	To study the biomechanics of spine at osteochondrosis.	During the anamnesis to determine the static and dynamic biomechanical deformations at osteochondrosis.	
2.	To study the questions of ethiology, pathogenesis and classification of osteochondrosis.	Name the main reason of degenerative-dystrophic diseases of the spine; classification (including clinical and X-ray signs).	
3.	To study the anatomical and functional features of the intervertebral disc, facet joints and ligaments of the spine.	To sketch a schematic structure of the intervertebral disc. X-ray pictures of thoracic and lumbar vertebrae in frontal and lateral projections.	
4.	The main clinical and X-ray manifestations of osteochondrosis in cervical, thoracic and lumbar spine.	List the main clinical and X-ray signs of osteochondrosis, depending from segment.	
5.	The essence of the treatment methods that are used at osteochondrosis, deforming spondylosis and spondyloarthrosis.	Name the complex treatment of degenerative spine diseases taking to account the pathological nature (osteochondrosis, deforming spondylosis and spondylarthrosis): A) medication, B) physical therapy; C) orthopedic, D) thermal bath.	
6.	Osteochondrosis of the coccyx.	Traumatic coccyalgia.	
7.	Spread ostechondrosis. Spondylolisthesis.	To explain the cause of the spread osteochondrosis, clinic, diagnosis and treatment. Spondylolisthesis.	
8.	Prevention of osteochondrosis.	Social and work rehabilitation at osteochondrosis.	

Requirements for work results, including design: the written work must be written or printed, have a neat appearance, the date, topic, task number, name of the performer must be indicated at the beginning, the text must be legible, structured;

Summing up: announcement of grades based on the results of the lesson. The grade for one practical lesson is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

List of recommended literature:

Basic:

1.V.F.Venger, V.V.Serdyuk Rashed Mochammad Traumatology and orthopedics: Compilation of methodical developments to the practical studies on traumatology and orthopedics including the materials for self-training of students of medical institutes of higher education. – Odessa: Print, 2004. – 248 p.

2. Golka G.G., Burianov O.A., Klimovitskiy V.G. Traumatology and orthopedics: textbook for students of higher medical educational institutions : transl. from. ukr. lang. – Vinnytsia : Nova Knyha, 2018. – 400 p.

Practical class 8.

Topic: *«DEGENERATIVE-DYSTROPHIC DISEASES OF THE JOINTS»* − ***6 hours***

Goal: To learn clinically and with X-ray`s help to examine patients with degenerative-dystrophic diseases of the musculoskeletal system, to make a differential diagnosis, be able to justify treatment, make medical examination and to forecast outcomes, depending from working conditions and specialty of patient. To understand social causes of degenerative joint disease (overload, injury, vibration). Meaning of ecological factors in the occurrence of joints diseases (chemicals, ionizing radiation); endocrinologic disorders of metabolism (overweight). To understand the deontological principles of communication with patients suffering degenerative-dystrophic diseases of the joints.

- to know:

1. Anatomical, physiological and age-related features of healthy and sick person`s joints.
2. Modern views on the etiology and pathogenesis of deforming arthritis.
3. The current classification of degenerative diseases of large joints: the O. S. Kosinkoy and 5 phases on E. T. Sklyarenko.
4. Clinical signs of degenerative-dystrophic disease of joints.
5. Methods of diagnosis and differential diagnosis.
6. Justify methods of conservative and surgical treatment.
7. The main principles of the rehabilitation, terms of earning capacity loss and cause of disability.

- be able to:

1. Carry out an examination of patients with diseases of the joints (inspection, palpation, a measurement of the joint`s movements).
2. Identify clinical symptoms of degenerative-dystrophic lesions of the joints, gait disorder, restriction of active and passive joints movements in all planes, types of contracture, the presence of limbs shortening and other symptoms.
3. Interpret X-ray pictures of degenerative diseases of large joints in upper and lower limbs.

4. Formulate a preliminary and final diagnosis.

5. Make a differential diagnosis with specific and nonspecific diseases of the joints.

6. Justify the plan of pathogenic treatment of degenerative joint disease taking into account the stage, form of process, patient's age, habitation, occupation and comorbidities.

7. Make a joint`s puncture.

8. Impose the fixation bandage (soft, gypsum) and orthopedic devices (tire, tutor) after removal of deformation.

9. Make a table (s) or educational board.

10. To make a presentation at a meeting of department SSS, of the faculty, of the university.

Basic concepts:

Deforming osteoarthrosis - a degenerative joint disease based on the primary degeneration of the articular cartilage with the following secondary pathological changes of bone epiphysis.

It affects mainly the large joints of the lower extremities, particularly the hip and knee, and approximately with the same frequency.

According to the factors that are the cause of this disease, deforming arthroses are divided into primary and secondary.

Primary arthroses (about 40% of the total) are the result of a degenerative process appeared in a healthy joint, cause of high physical loads and cause of the mismatch between the degree of mechanical load, which falls on a unit area of the articular cartilage, and the ability of the cartilage to depreciation.

Secondary arthroses (up to 60% of the total) occur after heavy mechanical trauma, for example intraarticular fractures. The causes of secondary arthrosis can also be congenital joint dysplasia and infectious diseases of the joints.

Because the joint cartilage does not have its own vasculature, its nutrition is done by osmosis from the subchondral layer of bone and from synovial fluid.

Microcirculatory disorders in these structures lead to a disruption of metabolism in the cartilage tissue.

Degenerative changed articular surfaces by direct contact begin to press on each other. Cause of the progression of the pathological process in the joints the deformation begins. It leads to the dysfunction of the muscular-ligamentous apparatus, and then to limitation of motion in joints - contracture.

There are **3 stages of deforming arthrosis**:

Stage 1. Stage of compensation. Pain in the joint is dull and has pulling character. It occurs within a few years after the beginning of the pathological process, has an insignificant intensity and appears after high physical load and quickly disappears after rest. Aching pain arises with the weather change. For a long time (sometimes up to 10 years), the pain can be almost one sign of the disease. While prolonged walking, patients begin to limp. For this stage are typical so called «starting» morning pain that occurs in the joint after a long rest or sleep. During the day this pain disappears. But in the evening after a full workday pain occurs again.

X-ray shows narrowing of the joint space and the presence of small bone growths on the outer edge of the acetabulum. This signs indicate about early degenerative changes in the joint.

Stage 2. Second stage is a stage of subcompensation. Pain in the hip joint becomes intensive and occurs by the smallest load. Pain is projected on the inguinal folds area and radiates to the knee joint. Pain is reduced only after a long joint unloading, but because of the constant high muscle tone pain does not disappear completely, even at night. This is called "night pain". It reduces the volume of movements on 15-35 degrees. Patients begin to limp noticeably; there appear skewed pelvis and compensatory scoliosis of the lumbar spine.

The X-ray shows a sharp narrowing of the joint space, the edge of the osteophytes grow beyond the cartilaginous lip and form characteristic canopies of the femoral head. Sometimes osteophytes like push out the femoral head in the area of the acetabulum lower edge. It leads to its outward displacement and subluxation.

Stage 3. Third stage of deforming arthrosis is called decompensation. Persistent pain causes patients considerable suffering. Pain does not disappear while rest and sharply increases with the least physical load on the joint. Range of motion in the joint is sharply reduced. In fact, only possible swaying movements. Patients walk with crutches, moving the affected lower extremity with pelvis.

X-ray shows the almost complete absence of joint space; head of the femur is mushroom-shaped deformed, flattened, neck sharply shortened. Edge-placed osteophytes cover tightly the head and neck of femur close to the acetabulum.

TREATMENT.

Drug treatment has a target to remove the pain, to eliminate the inflammatory response, to normalize the metabolic processes in the cartilage, to improve blood microcirculation of the subchondral bone. Commonly are used groups of chondroprotecting and chondromodulating drugs - such as, terafleks, hyalgan, and others.

All chondroprotectors:

- reduce the activity of enzymes that destroy joint cartilage;
- slow down the biodegradation processes of cartilage and stimulate its regeneration processes;
- recover amortization properties of cartilage;
- assist the resumption of the elasticity of the joint capsule;
- improve the viscosity of synovial fluid;
- have a pronounced anti-inflammatory and local anesthetic effect.

By expressed pain syndrome can use application of nonsteroidal anti-inflammatory drugs. Effectively, especially in the presence of chronic reactive synovitis is intra-articular injection of steroidal anti-inflammatory drugs.

At arthrosis without significant infraction of the congruence of articular surfaces extra-articular operations have the advantage, such as various types of osteotomies of the proximal femur, which change the topography of the load in the hip joint. It should be noted that the effect of these surgical methods is limited, as a rule, fairly short-lived

period of time. Radically treatment of deforming arthrosis can be the total endoprosthetics of the joint.

Equipment: laptop, multimedia presentation on the subject of practical training, educational videos.

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.) - not foreseen.

3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

a) Oral survey, conversation, collective discussion and discussion on the subject of the lesson;

b) List of educational practical tasks that must be completed during practical classes: based on the proposed clinical situations:

A. Self-test tasks for basic knowledge level and skills.

1. List the types of movement's restrictions in the joint:

A. Contracture;

B. Rigidity;

C. Fibrous ankyloses;

D. Bone ankyloses;

E. Hypermobility.

2. List the etiologic factors of deforming arthrosis:

A. Traumatic;

B. Angiotrophic;

C. Dysplastic;

D. Involutive;

E. Idiopathic;

F. Inflammatory.

3. What changes in the movement`s amplitude in the joints occur at deforming arthrosis:

A. Flexion contracture;

B. Extension contracture;

C. Fixed abduction;

D. Fixed adduction;

E. The restriction of rotational movements.

4. List the X-ray signs, characterized the idiopathic form of deforming arthritis:

A. Narrowing of joint space;

B. Unequal articular surfaces;

C. Osteochondritis in the background of osteoporosis;

D. Paraarticular calcifications.

5. What are the typical contractures at deforming arthrosis?

A. Flexion;

B. Adduction;

C. Extension;

D. Abduction;

E. Flexion-extension.

6. How many degrees of severity are distinguished at the deforming arthrosis?

A. One;

B. Two;

C. Three;

D. Four;

E. Five.

B. Questions for self-control.

1. What are the main reasons leading to degenerative diseases of the joints?
2. The pathogenesis of degenerative diseases of the joints.
3. Classification of degenerative joint disease.

4. The main clinical signs of deforming arthritis at different stages of the process.

5. What are the X-ray signs of degenerative diseases of large joints, depending from the form and stage of the process?

6. What methods of treatment are used at the degenerative diseases of the joints, taking into account the form and stage of the process?

7. Indications and basic principles of surgical treatment at degenerative-dystrophic diseases of the joints.

8. What methods of prevention are used to prevent the degenerative diseases of the joints taking to account the etiologic factors of disease?

C. Tests for self-control with correct answers.

1. Patient 46 years complained of pain in the knee joint, especially in the morning and after exercise, joint "swells" periodically, after the application of warm procedures and at rest the pain decreases. At examination there are no outside changes. Palpation of the joint is moderately painful. Active and passive movements are full, moderately painful at the end of motion`s range.

A. Formulate a diagnosis. (Deforming arthrosis, I degree).

B. Are there indications for the surgery? (No).

C. What physiotherapy will be recommended? (paraffin applications, magnetic therapy, ultrasound).

D. What medications can you offer to the patient? (Movalis, Voltaren, Diclofenac).

2. In what cases of deforming arthrosis endoprosthetics is shown?

A. In severe unilateral disease.

B. In severe bilateral disease.

C. In light unilateral disease.

D. In mild bilateral disease. (B)

3. List the major groups of drug therapy, which is used in treatment of deforming arthrosis.

A. Nonsteroidal anti-inflammatory drugs

B. Analgesics;

C. Sedatives;

D. Anti-spasm drugs;

E. Protease inhibitors;

F. Hormones.

4. List surgeries at deforming arthrosis.

A. Arthroplasty;

B. Endoprosthetics;

C. Arthrodesis;

D. Correction osteotomy;

E. Subchondral tunnelisation;

F. Myotomy;

G. Fasciotomy.

5. In patient 22 years old after child injury of shin has developed knee deformation at an angle, open to the outside (15^{0}). About two years ago there was pain in the joints after physical loads. On X-rays are defined deformations of the joint, flattening of the condyle of the tibia, pronounced subchondral sclerosis.

A. Identify the type of knee joint`s deformation;

B. Provide a complete diagnosis;

C. Name the etiological factor leading to the development of pain;

D. Determine the patient treatment.

The orienting map for independent work with literature according to the

№	Main tasks	Guidelines	Answers
1.	Classification of degenerate-dystrophic diseases of joints	What is the classification of degenerative dystrophic joint diseases	
2.	Learn the clinical signs of deforming joints diseases	Identify the main clinical symptoms of deforming arthrosis	
3.	Conservative treatment of deforming arthrosis	On what principles is based treatment of degenerative-dystrophic diseases of joints	

4.	Surgical treatment of degenerative-dystrophic diseases of the joints	What are the indications for surgical treatment of patients with degenerative-dystrophic diseases of joints	

Requirements for work results, including design: the written work must be written or printed, have a neat appearance, the date, topic, task number, name of the performer must be indicated at the beginning, the text must be legible, structured;

Summing up: announcement of grades based on the results of the lesson. The grade for one practical lesson is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

List of recommended literature:

Basic:

1.V.F.Venger, V.V.Serdyuk Rashed Mochammad Traumatology and orthopedics: Compilation of methodical developments to the practical studies on traumatology and orthopedics including the materials for self-training of students of medical institutes of higher education. – Odessa: Print, 2004. – 248 p.

2. Golka G.G., Burianov O.A., Klimovitskiy V.G. Traumatology and orthopedics: textbook for students of higher medical educational institutions : transl. from. ukr. lang. – Vinnytsia : Nova Knyha, 2018. – 400 p.

Practical class 9.

Topic: «*CONGENITAL DEFORMATIONS OF THORAX AND SPINE*» **- 6 *hours***

Goal: To learn the modern definition of congenital deformations of the thorax and spine, their diagnostic and differential diagnostic with such diseases and syndromes, conservative and surgical treatment methods depending from the patient's age and degree of deformation. The formation of a highly professional physician who is well versed in matters of the chest and spine deformation from the position in profound knowledges about clinical, anatomical and radiologic features of disease, which is studied; education of professional responsibility of physician, of skill to correct evaluation the objective research techniques of spine, the importance of these studies for the legal, psychological and professional rehabilitation of the patient.

- to know:

1. Anatomy, physiology of thorax and spine at healthy and sick person.
2. Modern views on the etiology and pathogenesis of spine and thorax deformations.
3. Methods of clinical examinations of patients with deformations of thorax and spine.
4. Indications for conservative and surgical methods of treatment of patients with congenital deformations of thorax and spine.

- be able to:

1. Diagnose pathology of spine and thorax.
2. Interpret X-ray pictures of patients with congenital deformations of thorax and spine.
3. Formulate a preliminary and final diagnosis.
4. Justify the principles and indications for functional and combination treatments at patients with congenital deformations of thorax and spine.
5. Determine the prognosis for recovery and working capacity.

Basic concepts:

SCOLIOTIC POSTURE

Scoliotic posture - the appearance of non-fixed, functional curvature in the frontal plane of the spine. It is often combined with a flat back, asymmetrical relaxation of spine muscles, and often the entire musculature of child. In a standing position appears

asymmetry of shoulder girdle, unequal scapula distance from the midline of the spine, asymmetry of waist triangles, and slight deviation in the vertebral column in frontal plane. At lying on stomach, spinal curvature disappears. At bending forward and stretching the child's head deviation of spine disappears. Radiographs of spine from S^{VII} to S^{I} in standing or lying positions in the posterior projection allows to accurate diagnosis. In the scoliotic posture in a standing position on the radiograph shows a deviation of the spine in frontal plane, while in the supine position it disappears. At the same time eliminates the pathological vertebral rotation around the vertical axis because of relaxing of spine muscles. This indicates only about functional nature of changes.

Children with defects of posture is shown systematically exercise therapy, massage of spine and abdomen, they have to swim regularly. The working posture during exercise must being monitored at school and at home to. A child should rest at day and at night to sleep on the bed with a semi-rigid shield and a small flat pillow under head. Sleep and rest should be mainly on the back and whether on the stomach**.**

SCOLIOSIS

Scoliosis - a fixed lateral deviation of the spinal with torsion and deformation of the vertebral bodies, as well as changes in neuromuscular and connective tissue. This pathological condition is detected in 10,2-27,6% of children with orthopedic diseases. It is associated with three different stages of development of spine - ossification of bodies, vertebral arches, body apophyses, processes and sinostosion of growth zone. Tentative dates of the first stage from 0 to 8 years old, the second stage - from 8 to 14 years and the third - from 15 to 17 years. X-ray picture of the normal spine in children 12 years of age is different from the X-ray picture of an adult cause of presence of arch nonunion in L^{4}-L^{5} and S^{1}-S^{2} vertebrae and features of ossification processes in apophysis of the vertebral bodies, which end up 15-16.

The analysis of ossification of the apophyses of the ilium wing allows, together with a radiograph of the ilium to assess symptom of Riesser, means the nature of the end of the growing child.

Etiological scoliosis is divided into congenital and acquired. Congenital includes anomaly of the spine and dysplastic, based on underdevelopment of the lumbosacral. Acquired includes neurogenic, rachitic, static and idiopathic.

Congenital scoliosis is caused of fusion of two vertebrae, or more, the presence of additional half-vertebrae, synostosis of ribs, anomalies of the arch and the processes of the vertebrae, and so on. This leads to an asymmetry in the growth of spine, often in the first year of life. Feature of the scoliosis is its slow progression, the deformation in a limited area and compensatory anti-curvature with flatter arch the spine.

Dysplastic scoliosis develops because of non-development of the lumbosacral spine (vertebrae cleft arc, the anomaly of a body L^5 or S^1, or one-sided sacralization or lumbolisation).This is the most severe deformation. Most often, it appears at the age of 8-10 years old, prone to rapid progression. The main arc of curvature appears in the lumbar spine.

Neurogenic scoliosis occurs mainly because of poliomyelitis, myopathy, spastic cerebral palsy, and syringomyelia. Paralytic scoliosis is based on damage of motor neurons of spinal cord with secondary changes in muscle of back and abdomen. This disease occurs mainly in the first year of the recovery period, when a loss of function of certain muscle groups is clear shown. At the same time, there are neurotrophic changes of spine, changes in sack-ligamentous apparatus and metabolic-hormonal disorders. This, together with the wrong static load on the spine during the growth of the child leads to severe deformity. Important role in prevention of the progress of deformation is the correct position of the child in bed in the acute stage; and in the recovery period - appropriate balneotherapy, exercise therapy, massage, and wearing an orthopedic corset.

Rachitic scoliosis is caused by main disease, which affects the skeletal system of the growing organism. This gives rise of osteoporosis in vertebral bodies, the deformation of lower limbs, changes in the neuro-muscular and sack-ligament. During a child's growth with an increase of body weight and change locomotor system increases physiological thoracic kyphosis and lumbar lordosis. Dysplasia in the area of apophyses of vertebral bodies, muscular weakness leads at these children to the torsion of the vertebral bodies and their deformation on areas of greatest load, means at the top of the

curve. Often rachitic scoliosis is detected in 2-3 years and is associated with excess and non-physiological load on the entire musculoskeletal system at the wrong seat, excessive walking in condition of insufficient of bracing and specific treatment.

Static scoliosis develops as a result of diseases of lower limbs (often with a congenital hip dislocation). Preventive interventions are early treatment of the main pathological condition and appropriate compensation of shortened limbs.

Idiopathic scoliosis - the most common form of spinal deformity. There are many theories of its occurrence. Idiopathic scoliosis has some unique features. It usually occurs in children 10-12 years of age or older (up to sexual maturation).Most often scoliosis is seen at girls.

The clinical picture of scoliosis is characterized by progressive spinal deformity in the sagittal plane and then in frontal with torsion of vertebrae and retardation of spinal growth in length. With the development of severe scoliosis may be signs of paresis and paralysis of the lower limbs. The end of child's growth stops progress of scoliosis.

In the pathogenesis of scoliosis plays an important role the neurodystrophic process in bone-cartilage tissue of spine with changes in the muscle-ligamentous apparatus, and static and dynamic disorders, leading to a sharp curvature of the spine in sagittal plane. During growth, progress of deformation in the thoracic region coincides with the torsion of the vertebral bodies, and their wedge-shaped deformation, changes in intervertebral discs, which leads to an increase in lordosis of the lumbar spine and sacrum, and the rotation of the pelvis.

Diagnosis of scoliosis. The patient is examined in three positions: standing, sitting and lying down. In the standing position the child is inspected from head to foot, first is determined the length of the lower limbs, then the presence or absence of joints contractures or deformations, position of the pelvis and body. At inspection of the body, attention is payed to the horizontal level of shoulder girdle, scapula angles position relative to the spine, the symmetry of the "waist triangles" where the base is the inner surface of the upper limb, and the side - the outer contours of the chest and lumbar region. With special pencil there is made a point on the skin respectively to spinous processes from the upper cervical to lumbar spine. Then is examined the mobility of the

spines in all directions, the nature of muscle tension, changes in body contours and topography of spinous processes.

In the sitting position is determined horizontal standing of the pelvis, the change in curvature of spine and shoulder girdle position. It`s necessary to determine the degree of stretching of the spine at pulling behind the head.

Examination of the patient is carried out in the supine position to identify the functional and organic changes. Thus, in scoliotic posture without structural changes of the spine visible deviation of axis corrects. When there is an organic change, it does not change.

With colored pencil, tag is applied on the skin, respectively to spinous processes of vertebrae, the corners of the scapula, iliac crests. With plaster plumb line is fixed to the skin at the site of projection of the spinous process of vertebra C7.These techniques allow you to detect visually changes in the symmetry of these anatomical structures and deviations of vertical axis of the spine. At inspection of the patient are visible asymmetry of waist triangles, different levels of the location of shoulder girdle and spinal deformity.

Localization of scoliosis is determined by the location of the main curvature arc: upper-thoracic, thoracic, thoracolumbar, lumbar, combined (the two main arcs). By direction of the top of the main curvature arc of spine, scoliosis can be right-sided, left-sided and combined (in the presence of two major arcs).

All the patients with scoliosis is necessary to make X-ray in position of standing and lying down from the C^7 to S^1.In determining of nature and level of deformation of the chest are made special detention in an bent position. Defining of spine angle is made by the Cobb method, which consists of measuring the angle formed by the intersection of the perpendiculars resumed toward each other from the tangent to the upper surface of the neutral vertebrae, which retain their normal position.

Radiologically are 4 degrees of scoliosis: I degree - angle of deformation up to 5 °, II - 6-25 °, III - 26-80 °, IV - more than 80 °.

The clinical picture. At *I stage* of scoliosis in a standing position are marked muscle weakness of back and abdomen, shoulder girdle asymmetry, the angles of the scapula are located at different distances from the spine and at different levels. There is a lateral

curvature of the thoracic spine and muscle lumbar roll on the opposite side, the asymmetry of the waist triangles. At bending forward, there is a muscular roll in the lumbar spine. On X-ray abnormal rotation of the vertebrae is missing. The pelvis is horizontal, in the lying position is determined the weakness of the long muscles of the back, straight and oblique abdominal muscles.

At *II degree* of scoliosis clinically is defined 8-shaped deformation of the spine, at bending forward there is rib hump, the asymmetry of shoulder girdle, waist triangles, pronounced muscle roll in the lumbar region, torsion of the vertebral bodies and their skewness in the main arc. At pulling a patient's head compensatory arc is reduced, while the main remains, the X-ray shows value for the main arc by Chaklin from 6 ° to 25 °, by Cobb - 16 to 30 °.

Progress of deformation in scoliosis depends on the etiology, the degree of curvature and the patient's age. It should be noted that how the earlier a child is ill, so more is danger of progression of scoliosis. It culminates at girls in 11-13 years, in boys 14-16 years old. Then progress is slowed down and stopped with the end of growth for 17-20 years. This can be determined by watching the process of ossification of the iliac wing (test Riesser) because it runs parallel with the ossification of the vertebral bodies.

At *III level* of scoliosis the spinal deformity has pronounced 8-shaped configuration with a violation of the body, skewing of the pelvis. Rib hump is expressed. Primary and secondary curvature arches are fixed. Angle of deformation of the main arc is 26-80° by Chaklin and 31-60 ° by Cobb with the presence of abnormal rotation of the vertebral bodies, their wedge-shaped deformation, as well as the intervertebral discs on top of the curve. Plane of shoulder girdle do not coincide with the plane of the pelvis and is shown by the deviation of the trunk from the vertical axis. Gross anatomical changes that occur in the vertebral bodies and ribs, lead to changes in blood-vascular system set of the spine. The deformation of the spinal canal leads to a shift of the spinal cord and vertebral venous plexus is compressed by dura mater. This scheme points out eloquently on severity of anatomical irregularities in the III degree of scoliosis.

At scoliosis in *IV stage* is determined severe deformation of the whole body and stop of its growth, pronounced kyphos-scoliosis of thoracic spine with a deviation of the whole

body in the direction of the main arc. Significant deformation of the chest leads to violation of the relationship and shift of inner organs. Along with this, there is compression of the spinal cord and the growing of phenomena of paresis in the lower limbs. On the X-ray is pronounced wedge-shaped deformity of the vertebral bodies in the thoracic region with phenomena of spondylosis and spondylarthrosis in the lumbar spine - a sharp torsion of bodies, oblique standing body of a vertebra S^V and a reversal of the pelvis. All presented a picture leads to a sharp decline of life the patient and severe disability.

Treatment. It`s necessary to detect early and to treat early forms of scoliosis. Treatment of children with impaired posture to start with proper nutrition, sleep hygiene, temper willow, learning to swim. The main methods of treatment should be non-surgical mobilization of the spine, correction of the deformation and hold the spine in the correct position by increasing of the back and stomach muscle tone to withstand the subsequent development of spinal deformity. This is achieved by regular exercise (gymnastics) and massage of the muscles, swimming at preschool age. At home, the child must have furniture according to his growth. Child should sleep in a bed with a semi-rigid shield. In addition, for deformity correction and spinal holding is often used gypsum beds or tire-skin corsets. In children of school-age can fail to achieve fully correction with a plaster corset and cribs, at this it is prescribed to wear orthopedic corsets, because in parallel with drug treatment and a balanced diet are performed exercise therapy, a spa treatment.

Conservative treatment is performed in a local clinic from the time of diagnosis and it continues up to stabilizing of the scoliosis or up to the end of the process of growth in the I degree of scoliosis and its transition into II degree. Treatment includes physical therapy for the formation of correct posture and a muscular corset, massage of back, chest and abdomen muscles, swimming style "brace", electrostimulation of the back muscles and TTF (electrophoresis of aminophylline on the spine, electrical stimulation of the muscles).

In the II degree of scoliosis exercise therapy involves special correcting exercises, and special paving, visiotraining, computer correction of posture. We recommend wearing a

soft corset of Leningrad type during school hours and during a long walk. With the rapid progress of scoliosis of II degree is shown the treatment in a sanatorium for children with musculoskeletal lesions of the motor system, studying in a boarding school for children with scoliosis and a course of conservative treatment in in the hospital. These measures can significantly reduce the number of patients with severe spinal deformity.

Surgical treatment. The indications for surgical treatment are the failure of conservative treatment and the progression of scoliosis to the II-III and IV (at an angle of deformation of more than 30 °). Before surgery, these patients make usually an attempt to correct the distortion by stretching on the board with a side traction, with head of the bed raised to 30-40 cm. Lateral traction with a large load should be directed to the opposite side of the curvature for the action of the main arc and torsion of the vertebrae. Term of traction is 2-4 months. If at 2 months traction effect is not achieved, the patients used plaster corsets. After correction of the deformity is performed surgical fixation of the spine at the current level.

The most common surgery for progressive scoliosis II-III degree is posterior spinal fusion with osteoplastic fixation of spine. After surgery, a plaster corset is imposed. At III level of scoliosis surgery is used in two stages: the first step - adjustment and stabilization of the lumbar spinal curvature in combination with the posterior spondylodesis with allograft on the arc of lumbar vertebrae; and the second stage - disctomy at level of chest arch of spine curvature, and then produce epiphyzodesis of thoracic vertebral bodies at the top of curvature "rubble" from the ribs. After surgery is imposed a plaster corset with a headholder.

Funnel chest. Congenital deficiency of cartilage - dysplastic nature of the disease. Not just a cosmetic defect - changes function of respiration and circulation. There are 3 degrees: I - "funnel" to 2 cm; II - up to 4 cm, 2-3 cm displacement of the heart, III - more than 4 cm, the displacement of the heart more than 3 cm. By form - symmetrical, asymmetrical and flat. Appears in the first years of life, increases with age.

Conservative treatment: exercise therapy, massage, swimming and overall physical development. With the progress II and III degrees - respiratory failure, indication for

surgical treatment, carried out in 3-4 years. Surgery - cutting the cartilage of the ribs, a correction.

Pigeon breast. Sprengel's deformity (congenital high standing of scapula) - malformation. Surgical treatment - method of Putt, Andrianov, Tarnovskiy. Complication - paresis of the brachial plexus, injury of the pleura.

Additional cervical rib. Klippel-Feil disease (fusion of cervical vertebrae or anomaly). The treatment is practically ineffective and futile.

Equipment: laptop, multimedia presentation on the subject of practical training, educational videos.

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).
2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.) - not foreseen.
3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

a) Oral survey, conversation, collective discussion and discussion on the subject of the lesson;

b) List of educational practical tasks that must be completed during practical classes: based on the proposed clinical situations:

A. Self-test tasks for basic knowledge level and skills.

- conduct an objective examination of the patient
- use additional methods of examination
- to make the differential diagnostic
- generalize the clinical material
- identify rational methods of treatment

B. Questions for self-control.

1. What signs of congenital deformations are diagnosed by examination and palpation of the children?
2. What is the cause of these diseases?
3. At what age is assigned corrective exercises at scoliosis? Who does spend it?
4. Up to what age is held conservative treatment of scoliosis and deformation of chest?
5. What is the essence of surgical treatment of scoliosis?
6. What complications appear because of irrational treatment or its absence?
7. What surgical treatment is used at the deformation of the chest?

C. Tests for self-control with correct answers.

1. In clinical practice, the most frequent is:

A) Congenital scoliosis;

B) Paralytic scoliosis;

C) Rachitic scoliosis;

D) Idiopathic scoliosis;

E) Neurogenic scoliosis.

2. At what deformation of the chest are marked the most serious cardiopulmonary disorders?

A) Carinate;

B) Funnel;

C) Flat;

D) For all listed;

E) There is no disorder.

3. The leading factor in the development of congenital spine deformity is:

A) Fusion or bifurcation of ribs;

B) Anomaly of the scapula and sacrum;

C) The isolated fusion of the vertebral bodies;

D) Increase or decrease of the vertebral number ;

E) All of the above.

4. Preventive examinations of children should begin:

A) In kindergartens and nurseries;

B) In the early grades of secondary school;

C) In the upper grades of secondary school;

D) In institutions, technical training colleges, when applying for a job;

E) In city military commissariat.

5. Disease Klipel-Feil – this is:

A) Congenital synostosis of the cervical and upper-thoracic vertebras with nonclosure of arch;

B) Presence of cervical ribs;

C) A subluxation of the 1st cervical vertebra of inflammatory etiology;

D) Acute muscular torticollis;

E) Webbed neck.

6. At a child of 12 years was established structural S-shaped scoliosis of thoracolumbar spine in 2 degrees. Which of the clinical symptoms is diagnosed at structural scoliosis?

A) Asymmetry of the lower corners of the scapula;

B) Asymmetry of the triangles of waist;

C) The appearance of paravertebral muscle roller;

D) The asymmetry of the Michaelis`s rhombus;

E) Pelvic skew.

7. At a child of 7 years, at examination orthopedist has determined the defect of posture, asymmetric localization of the right scapula, rejected to the left thoracic in region axis of the spine. Radiographically - right scapula is reduced in size, located at 4 cm above the left. Your preliminary diagnosis.

A) Scoliosis;

B) Paralysis of the shoulder girdle;

C) Webbed scapula;

D) Sprengel's disease;

E) Scheuermann's-Mau`s disease.

8. The girl of 13years is being observed from 9 years with scoliosis. The control X-ray shows scoliosis of the thoracic spine, the vertebral axis angle of 20 ° after Cobb. What should be following treatment?

A) Fixation of spine with CITO corset and courses of physio-functional treatment;

B) A spa treatment;

C) Gypsum bed, physiotherapy;

D) Surgery;

E) Physio-functional treatment.

The orienting map for independent work with literature according to the

№	Main tasks	Guidelines	Answers
1.	To study the biomechanics of spine and thorax at scoliosis.	During the anamnesis to determine the dynamic of static deformations of spine and thorax.	
2.	To study the questions of etiology, pathogenesis and classification of deformations of spine and thorax.	Name the main reason of deformations of spine and thorax; classification (including clinical and X-ray signs).	
3.	To study the anatomical and functional features of deformations of spine and thorax.	To sketch a schematic structure of spine and thorax. X-ray pictures of deformations of spine and thorax in frontal and lateral projections.	
4.	The main clinical and X-ray manifestations of deformations of spine and thorax.	List the main clinical and X-ray signs of deformations of spine and thorax.	
5.	The essence of the treatment methods that are used at deformations of spine and thorax.	Name the complex treatment of deformations of spine and thorax taking to account the pathological nature: A) medication, B) physical therapy; C) orthopedic, D) thermal bath.	

Requirements for work results, including design: the written work must be written or printed, have a neat appearance, the date, topic, task number, name of the performer must be indicated at the beginning, the text must be legible, structured;

Summing up: announcement of grades based on the results of the lesson. The grade for one practical lesson is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

List of recommended literature:

Basic:

1.V.F.Venger, V.V.Serdyuk Rashed Mochammad Traumatology and orthopedics: Compilation of methodical developments to the practical studies on traumatology and orthopedics including the materials for self-training of students of medical institutes of higher education. – Odessa: Print, 2004. – 248 p.

2. Golka G.G., Burianov O.A., Klimovitskiy V.G. Traumatology and orthopedics: textbook for students of higher medical educational institutions : transl. from. ukr. lang. – Vinnytsia : Nova Knyha, 2018. – 400 p.

Practical class 10.

Topic: « *CONGENITAL AND ACQUIRED DEFORMATIONS OF LIMBS*» **- 6 *hours***

Goal: To learn the modern definition of congenital deformations of limbs, their diagnostic and differential diagnostic with such diseases and syndromes, conservative and surgical treatment methods depending from the patient's age and degree of deformation. The formation of a highly professional physician who is well versed in matters of the limbs deformations from the position in profound knowledges about clinical, anatomical and radiologic features of disease, which is studied; education of professional responsibility of physician, of skill to correct evaluation the objective research techniques of limbs, the importance of these studies for the legal, psychological and professional rehabilitation of the patient.

- to know:

1. Anatomy and physiology of the upper and lower limbs of a healthy and sick person.
2. Modern views on the pathogenesis of limb deformities.
3. Methods of clinical examination of patients with limb deformities.
4. Indications for conservative and operative methods of treatment of patients with congenital limb deformities.

- be able to:

1. Diagnose limb pathology.
2. Interpret radiographs of patients with congenital limb deformities.
3. Formulate a preliminary and final diagnosis.
4. To substantiate the principles and indications for functional and combined methods of treatment of patients with congenital limb deformities.
5. Determine the prognosis for recovery and work capacity.

Basic concepts:

CONGENITAL DYSPLASIA OF THE ILP JOINT

Congenital dysplasia of the hip joint is a violation of the growth and development of all elements of the hip joint, namely the bones that make up the hip joint, the capsule-ligamentous and muscular apparatus. This concept unites 3 states of

the joint: congenital subluxation, subluxation and the most severe degree - congenital dislocation of the hip. The lesion can be unilateral or bilateral, more often observed in girls.

There is no single point of view regarding the etiology of hip dysplasia. The most attention is drawn to the theory of the defect of the primary implantation of the fetus and the delay in the development of a normally implanted joint. Frequent combinations of dysplasia of the hip joints with other congenital defects (muscular torticollis, congenital clubfoot, etc.) testify to the confirmation of the violation of the primary establishment. As for the second point of view, supporters consider it to be the cause of the unfavorable influence of external and endogenous factors on the fetus. This is confirmed by a statistically higher percentage of dysplasias in industrially polluted areas.

Hypoplasia of the acetabulum is typical for dysplasia of the hip joint: it is shallow, flat, elongated along its length with varying degrees of beveling of the roof (more than 30°). As a rule, the late appearance of the ossification core of the femoral head and the delay in its development are characteristic. A fairly frequent element of dysplasia is a violation of physiological ratios in the proximal part of the thigh, namely, pathological antetorsion (rotation of the proximal part of the thigh forward by more than 10° from the age norm) and an increase in the cervical-diaphyseal angle. Dysplastic changes of the joint capsule, muscles and ligaments are also necessarily present.

In the state of pre-dislocation, in the presence of the above-mentioned changes to one degree or another, the head of the femur is centered in the acetabulum, in contrast to subluxation and dislocation.

With a subluxation, the head of the femur moves up and out and presses on the elastic edge of the acetabulum (the so-called limbus), pushing it up, but does not go beyond it.

In the state of dislocation, the head of the femur goes beyond the acetabulum, the limbus, in turn, turns into the acetabulum. The above-mentioned pathological changes are the most pronounced. The acetabulum becomes flat. The head of the femur,

pressing on the pubic bone or the edge of the acetabulum, is deformed. The acetabulum is filled with fat and connective tissue. The capsule of the joint stretches and eventually can take the shape of an "hourglass" or fuse with the acetabulum and the iliac bone, which becomes a significant obstacle for further closed reposition.

As the child grows, changes in the hip joint progress. In 15-20% of cases, the subluxation transforms into subluxation and dislocation of the hip.

Early clinical symptoms of hip dysplasia are:

☐ restriction of abduction of the lower limbs, bent at a right angle in the hip and knee joints, which should be 80-90º in newborns, and 70-80º in children after the first month.

☐ symptom of slipping (Marx - Ortolani), or reduction and dislocation of the femoral head, this is a sign of instability of the hip joint. It is characteristic of newborns and often disappears by 7-10 days, very rarely lasts up to 1-2 months.

☐ asymmetry of the buttock-femoral and femoral skin folds.

☐ relative shortening of the lower limb.

☐ excessive external rotation of the hip

☐ external rotation of the feet.

☐ palpation of the femoral headat the outer edge of the acetabulum.

☐ oblique location of the genital slit in girls.

After the start of static loading, the clinic of congenital dislocation becomes more pronounced. Children start walking late (up to 1.5 years and later). The gait is unstable: with one-sided dislocation - lameness, with bilateral - "duck" gait. Gait disturbance is accompanied by rapid fatigue and periodic pains in the hip joint. Compensatory lumbar lordosis is gradually formed. During the examination, relative shortening of the limb, restriction of abduction of the hips, external rotation, and change in the shape of the limb are determined.

In order to clarify the diagnosis, up to 3 months of age, an ultrasound examination of the hip joints is performed using the Graf technique. However, the most objective method of research, which must be performed when dysplasia is suspected, is radiography of the hip joints, which is performed after 3 months of age. Evaluation of

the radiograph is carried out according to the Hilgenreiner scheme.

The key to successful treatment of hip dysplasia is early diagnosis of this pathology. It is based on the provision of a therapeutic position to the limbs with the maximum possible preservation of the function of the joints, which leads to the correct further development of the joints and is provided by various functional orthopedic means.

When dysplasia is detected in the first days of a child's life, wide swaddling is used, and from 2 to 3 weeks of age, orthopedic pants are used, which keep the child's legs in a spread state. Therapeutic gymnastics and massage are used. After 3 months of age, X-rays are taken, and if signs of dysplasia persist, the child is transferred to Pavlik's stirrups and stays in them for at least 3 months, after which control X-rays are taken to determine the tactics of further treatment or its termination, provided the joints are fully developed. If necessary, after 6-7 months of age, it is possible to use more rigid abduction devices and splints. The complex of auxiliary conservative measures includes massage, therapeutic gymnastics, thermal procedures, magnet, electric. phoresis with calcium chloride, ATP, etc.

In the case of congenital dislocation, when it is not possible to center the head in the acetabulum with the help of functional orthopedic means, treatment is carried out using the Coddevil method ("traction overhead" method). The child is subjected to permanent adhesive stretching of the lower limbs in a vertical plane with gradual withdrawal on a special metal arc mounted in the bed, which lasts about 2-3 weeks. When complete abduction of the hips is achieved, self-adjustment of the femoral head often occurs, if this does not happen, a closed reposition is performed. After removing the extension, the limbs are fixed in a plaster bandage in the position of abduction and flexion in the hip and knee joints by 90°.

In case of inefficiency of conservative treatment methods, surgical interventions are carried out - open repositioning and, if necessary, corrective interventions on the bones of the pelvis and thigh to improve the anatomical proportions in the joint.

Scoliotic posture is the appearance of an unfixed, functional curvature in the frontal plane of the spine. It is often combined with a flat back, asymmetric weakening

of the back muscles, and often all of the child's muscles. In the standing position, asymmetry of the upper arm, uneven separation of the shoulder blades from the midline of the spine, asymmetry of the waist triangles and a slight deviation of the axis of the spine in the frontal plane are revealed. In the position of lying on the stomach, the curvature of the spine disappears. When bending the body forward or pulling the child by the head, the deviation of the spine disappears. An X-ray of the spine from SVII to SI, standing or lying in the back projection allows you to accurately establish the diagnosis. With scoliotic posture in the standing position, a certain deviation of the spine in the frontal plane is visible on the X-ray, and it disappears in the lying position. At the same time, the pathological rotation of the vertebral bodies around the vertical axis is eliminated as a result of the relaxation of the back muscles. This indicates only the functional nature of the changes.

In children with postural disorders, physical therapy, back and abdominal massage should be systematically performed, and they should regularly engage in swimming. At school and at home, it is necessary to monitor the working posture during classes. The child must observe a regime with rest during the day; at night sleep on a semi-hard bed with a shield and a small flat pillow under the head. Sleep and rest should be mainly on the back and stomach.

CONGENITAL CLUBFOOT

Congenital clubfoot is also one of the most common birth defects. It occurs more often in boys, in 60% of cases it is bilateral, and in 10% it is combined with other congenital defects (squint, hip dysplasia, syndactyly, etc.).

Congenital clubfoot is also a polyetiological disease caused by exogenous and endogenous factors, heredity. In the embryonic period, the foot does not reach full rotation in the sagittal plane, which leads to dysplasia of the muscles: calf, tibialis posterior, flexor digitorum longus, and flexor digitorum longus 1.

Dysplasia of these muscles leads to an incorrect position of the foot, characterized by the following elements: equinus - fixed plantar flexion of the foot; supination - turning the foot inwards; adduction - bringing the front part. This, in turn, leads to dysplasia and a fibrous process in the supratalar, subtalar, and other joints of

the foot, as well as, over time, a violation of the formation and growth of the bones of the lower leg and foot.

Diagnosis of congenital clubfoot is not difficult. Immediately after the birth of a child, attention is drawn to the incorrect position of one or both feet, which are in the above-mentioned position of equinus, supination and adduction. Depending on the severity of the deformity, there are 3 degrees of clubfoot.

With a mild degree of clubfoot, moderate equinus, supination of the foot with adduction of its front part is observed. The inner edge of the foot is placed higher than the outer edge. The heel is moderately pulled up and supinated. When attempting manual correction, all elements are easily eliminated.

With an average degree of clubfoot, equinus, supination and adduction are more pronounced and rigid. The foot is positioned so that the plantar surface is almost completely turned back. The heel is significantly pulled up. The contour of the outer bone protrudes in relief, and the inner one is smoothed. When attempting passive manual correction, it is not possible to eliminate all deformation elements.

The severe degree is characterized by severe rigid deformation of the foot. It is rotated inwards so that the sole surface is completely turned back. The adduction of the anterior part almost reaches a right angle, so that a deep furrow (Adams furrow) is formed at the height of the fold. On the back, the edge of the head of the talus protrudes under the skin. The inner bone is immersed in soft tissues. The contours of the heel hump are smoothed, the heel is significantly pulled up.

Treatment of congenital clubfoot begins immediately after diagnosis. The initial stage is redressing (manual elimination of deformation) and fixation of the foot with bandages according to the Fink-Ettingen method. What is more, during redressing, the elimination of the components of the deformity must be carried out sequentially - first, supination and adduction of the anterior part are eliminated, and only then, keeping the foot in the state of the achieved correction, - equinus. With moderate and severe clubfoot, such manipulations are usually not enough, and from 2 to 2.5 months of age (and according to the Ponseti method from 2 to 3 weeks of age), the deformation is corrected with staged plaster bandages, which are changed every 7 to 9 days. At the

same time, the elimination of the deformity is also carried out in stages, first cavus (increasing the height of the longitudinal arch of the foot), supination, adduction, and finally equinus. The complex of auxiliary conservative measures includes massage, exercise therapy, paraffin applications, etc.

In cases where conservative means fail to eliminate the deformity, surgical treatment is indicated. Soft tissue surgery is performed using the Zatsepin method, which consists in lengthening dysplastic muscles and ligamentocapsulotomy of the foot joints. In older children who were not operated on in time, such operations are supplemented by wedge-shaped resections and osteotomies of the bones of the foot. Long-term plastering is also used in the postoperative period.

After removal of the cast, both after conservative and after surgical treatment, a long course of rehabilitation is carried out with the appointment of orthopedic shoes and other orthopedic means.

Congenital defects of the upper and lower limbs such as syndactyly, polydactyly, ectrodactyly, congenital club-handedness are not difficult to diagnose and are treated operatively.

Syndactyly is a soft-tissue or bony fusion of the fingers. Treatment is operative - dissection of syndactyly with skin plastic using the method of opposite triangles.

Polydactyly - the presence of additional fingers and toes (sometimes with additional metatarsal or metatarsal bones). Treatment is operative - removal of extra fingers.

Ectrodactyly - absence of fingers or toes (possibly with metatarsal or metatarsal bones). For treatment, various reconstructive operations are performed or prosthetics of defects is performed.

CONGENITAL HANDEDNESS

Congenital club-handedness can be the result of congenital shortening of muscle tendons and ligaments of the palmar-radial side or underdevelopment or absence of the radial, less often the ulnar bone. It can be one- or two-sided. The first type can be considered as a stable congenital contracture of the wrist joint in the position of flexion and adduction, similar to congenital clubfoot. Absence or underdevelopment of the

radius or ulna may also be accompanied by the absence of some hand bones and forearm muscles. In the absence of the radius, the hand deviates in the radial direction, the ulnar - in the ulnar direction.

Treatment of this pathology is extremely difficult and only operative. Various reconstructive operations are performed on the forearm and hand, external fixation devices are used for bone lengthening, etc.

Congenital false joints can be on any tubular bones of the skeleton, but mostly they are observed on the bones of the lower leg. The etiological factors of this disease are not fully known, and most often the occurrence of this pathology is associated with fibrous osteodysplasia.

Diagnosis of a false joint is not difficult. Clinically, there are pathological movements in the c/3 area of the lower leg, loading along the axis of the lower leg is impossible, as the lower leg turns and is not resistant. Over time, the leg muscles become atrophic, the foot (and often the leg) lags behind in growth. X-rays are performed to confirm the diagnosis.

Treatment of this pathology is exclusively operative - various types of bone plastic surgery, after careful removal of pathologically changed tissues, followed by long-term immobilization.

Equipment: laptop, multimedia presentation on the subject of practical training, educational videos.

Plan:

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).

2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.) - not foreseen.

3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):

a) Oral survey, conversation, collective discussion and discussion on the subject of the lesson;

b) List of educational practical tasks that must be completed during practical classes: based on the proposed clinical situations:

A. Self-test tasks for basic knowledge level and skills.

- conduct an objective examination of the patient
- use additional methods of examination
- to make the differential diagnostic
- generalize the clinical material
- identify rational methods of treatment

B. Questions for self-control.

1. Dysplasia of the hip joint. Early diagnosis.
2. Dysplasia of the hip joint. Research methods.
3. Treatment of hip dysplasia in children of the first year of life.
4. Treatment of hip dysplasia in older children.
5. Congenital clubfoot. Clinic.
6. Treatment of congenital clubfoot /conservative and operative/.
9. Congenital malformations of the upper and lower limbs. Clinic. Diagnostics.
10. Treatment of congenital malformations of the upper and lower limbs.

C. Tests for self-control with correct answers.

1. Congenital flat feet in children can be established at the age:

A) up to a year

B) 2 years

C) 3 years

D) 4 years

E) 5-6 years

2. Which of the forms of syndactyly occurs most often:

A) skin

B) membranous

C) bone

D) final

E) all are rare

3. A favorable factor for congenital hip dislocation is:

A) inflammatory process of the hip joint

B) hip dysplasia

C) damage to the hip joint

D) incorrect location of the fetus in the womb

E) violation of metabolic processes in the fetus

4. The leading symptom of congenital hip dislocation in the first weeks of a child's life is:

A) asymmetry of skin folds

B) shortening of the lower limb

C) restriction of hip abduction

D) Marx-Ortolani symptom ("clicking" symptom)

E) all the above signs

5. What are the components of such a deformity as congenital clubfoot:

A) equinus, supination and adduction of the anterior division

B) adduction, pronation and flattening of the longitudinal arch

C) pronation and adduction

D) dorsiflexion and adduction

E) equinus, pronation and adduction

6. Treatment of hip dysplasia should begin

A) from birth

B) at the age of 1 month.

C) at the age of 2 months.

D) at the age of 3 months. and older

E) after 1 year

The orienting map for independent work with literature according to the

№	Main tasks	Guidelines	Answers
1.	Learn the classification of malformations of the locomotor system	Recognize the main clinical manifestations of malformations. Differentiate developmental disabilities	
2.	To identify the peculiarities of the course of developmental defects.	Name the main reason of deformations of spine and thorax; classification (including clinical and X-ray signs).	
3.	To study the anatomical and functional features of deformations of limbs	To interpret auxiliary research methods: ultrasound examination, radiography	
4.	The main clinical and X-ray manifestations of deformations of limbs	List the main clinical and X-ray signs of deformations of limbs	
5.	The essence of the treatment methods that are used at deformations of limbs	To propose the doctor's action algorithm and management tactics for patients with developmental disabilities	

Requirements for work results, including design: the written work must be written or printed, have a neat appearance, the date, topic, task number, name of the performer must be indicated at the beginning, the text must be legible, structured;

Summing up: announcement of grades based on the results of the lesson. The grade for one practical lesson is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

List of recommended literature:

Basic:

1.V.F.Venger, V.V.Serdyuk Rashed Mochammad Traumatology and orthopedics: Compilation of methodical developments to the practical studies on traumatology and orthopedics including the materials for self-training of students of medical institutes of higher education. – Odessa: Print, 2004. – 248 p.

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