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Department of OTORHINOLARYNGOLOGY

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METHODICAL AID OF PRACTICAL LESSONS

ON THE EDUCATIONAL DISCIPLINE

Course IV Faculty Medical

Academic discipline: **Otorhinolaryngology**

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Practical lesson 1

Topic: Endoscopic methods of examination of ENT - organs.

UPDATE OF THE TOPIC. Determination of the initial level of knowledge of students with the obligatory component of the first practical training in otolaryngology. The necessity of holding this event is conditioned by the requirements of higher education pedagogy for integration of the educational process and consistency in the study of basic theoretical and clinical disciplines. Knowledge of the technique and technique of examination of the otolaryngology patient and the ability to perform endoscopic examination of ENT organs is important for the detection of pathology of the ear, nose, pharynx and larynx and diagnosis. The student, who is fluent in this technique, is able to work effectively in every class (by examining patients in a hospital or outpatient clinic), and therefore able to fully understand the cycle of otolaryngology. This knowledge is especially needed for future family doctors, since 1/3 of all patients require the advice and treatment of an otolaryngologist.

Purpose of lesson: to master technique of use of a frontal reflector; to learn the technique and work out the technique of endoscopic examination of an otolaryngological patient (anterior and posterior rhinoscopy, oropharyngoscopy, indirect laryngoscopy, otoscopy), to study the anatomy and physiology of the outer and middle ear.

The student must know

1. Procedure, technique and technique of examination of an otolaryngological patient.
2. Normal endoscopic picture of the nose, pharynx, larynx and ears, as well as possible typical abnormalities in their endoscopic picture.
3. Clinical anatomy, physiology, methods of research of the outer and middle ear.

The student must be able

1. Use the frontal reflector.
2. To carry out anterior rhinoscopy, to estimate a condition of a nasal cavity in norm and at deviations from norm.
3. Perform posterior rhinoscopy, assess the condition of the posterior sections of the nose and nasal part of the pharynx in the normal and with deviations from the norm.
4. To carry out oropharyngoscopy, to estimate a condition of a mouth cavity and a mouth part of a pharynx in norm and at deviations from norm.
5. Perform an indirect laryngoscopy, assess the condition of the larynx of the pharynx and larynx in the normal and at deviations from the norm.
6. To carry out an otoscopy, to estimate a condition of external auditory course and a tympanic membrane in norm and at deviations from norm.

Classroom equipment

1. Tools for performing endoscopic examination of ENT organs: nasal mirrors, spatulas, rear rhinoscopy mirror, laryngeal mirrors, ear funnels.
2. Schemes, tables, slides, models.
3. Tests to determine the initial level of knowledge.
4. Situational tasks for final control of students' level of knowledge.

Plan

№№	The name of the composition of the class	Hour
I.	Organizational moment (greetings, checking those present, announcing the topic, the purpose of the lesson, motivating students to study the topic).	7
II.	Control of supporting topics.	38
2.1	Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units).	8
2.2	Questions (test tasks, problems, clinical situations) to check basic knowledge on the subject of the lesson.	30
III.	Formation of professional abilities and skills (mastery of skills, conducting	40

	curation, determining the treatment scheme, conducting laboratory research, etc.).	
3.1	Content of tasks (tasks, clinical situations, etc.).	20
3.2	Recommendations (instructions) for performing tasks (professional algorithms, orienting maps for the formation of practical skills and abilities, etc.).	3
3.3	Requirements for work results, including to registration	2
3.4	Control materials for the final stage of the lesson: problems, tasks, tests, etc. (if necessary).	15
IV.	Summing up.	5

The main stage of the employment

1. Determination of the initial level of knowledge of students in the anatomy and physiology of ENT organs. Control questions for determining the initial level of knowledge of students in the anatomy and physiology of ENT organs are given after the methodological development before the first lesson.
2. Introducing students to the clinic. Students should be familiar with the main units of the clinic and the requirements for the appearance and behavior of students in the clinic.
3. Development of methods and techniques of endoscopic examination of ENT organs.

Examination of an otolaryngological patient is performed from the point of view of the integrity of the body. It begins with a detailed elucidation and analysis of the patient's complaints, the collection of a medical history, and life. External examination of ENT organs is performed, palpation and percussion performed if necessary. An endoscopic examination of ENT organs is then performed.

Organization of workplace of an otolaryngologist

For the examination and special endoscopic examination of patients with diseases of the ear, throat and nose, it is necessary to create appropriate conditions that determine the organization of the workplace. To do this, you must have a light source, appropriate tools and a frontal reflector. The light source (electric lamp) should be placed to the right of the patient at the level of the ear, at a distance of 10-20 cm from it. On the tool table are tools, medicines, bandages. The patient is relative to the doctor on the right, and the light source is on the left. The frontal reflector consists of a concave mirror with a focal length of 25-30 cm, which is attached by means of a hinged adaptation to the belt, which allows firmly to secure the frontal reflector on the head in the area of the forehead above the left eye. The center of the mirror has an opening through which the left eye is inspected. The hinged device allows you to change the direction and angle of illumination during inspection of the investigated body.

The technique of using the frontal reflector

After fixing the frontal reflector in the area of the forehead, his mirror is positioned opposite the left eye so that the rear surface of the mirror was placed near the cheek and lateral surface of the doctor's nose, and the pupil of the eye - at the level of the opening of the mirror. The ability to use the frontal reflector requires the following rules: it is necessary to provide sufficient illumination of the investigated body; direct the beam of light, closing the right eye with the palm of your hand; rotate the mirror of the frontal reflector so that the "bunny" of light is visible at the tip of the nose, then release the right eye and carry out the examination with both eyes (left through the hole in the mirror), which will ensure the binocularity of the study.

Methods of otorhinolaryngological examination

Otorhinolaryngological examination is performed in the following order: anterior rhinoscopy, oropharyngoscopy, posterior rhinoscopy, indirect laryngoscopy, otoscopy. Adults, older and younger children follow this review procedure. In infants, the examination begins with the ear. This is due to the fact that during crying the baby's eardrum becomes red, which complicates the evaluation of the otoscopic picture.

Anterior rhinoscopy

First, they examine the outer nose and the nose, lifting the tip of the nose up with the thumb of the right hand. Then the left hand is taken by the nasal mirror, the right hand is placed on the patient's crown, fixing his head. Under the control of vision and light from the reflector mirror enter the branches of the nasal mirror in the closed state in the nasal vein parallel to the bottom of the nasal

cavity. The ends of the nasal mirror branches should not touch the mucous membrane. Gradually expanding the branches, alternately inspect both halves of the nose. Each half of the nose is examined from two positions. In the first position, when the patient's head is in a straight position, the normal lower sections of the nasal cavity are visible: the bottom, the lower nasal shells, the lower part of the nasal septum, the lower nasal passage. In the second position, when the patient's head is tilted back, the middle and upper sections of the nasal cavity are normal: the middle and upper divisions of the nasal septum, the middle and sometimes the upper nasal shells, the middle nasal passage, olfactory slit. At wide nasal passages hoana, a back wall of a nasopharynx, adenoid are well visible of vegetation. Normally, the mucous membrane of the nasal cavity is pink with a smooth smooth surface. The nasal septum is located in the middle. After the examination, the nasal mirror is carefully removed from the nose. It is not necessary to completely close the branches in the nose of the nose in order not to grasp or tear the hair.

Oropharyngoscopy

The pharyngeal examination begins with examination of the neck and palpation of the regional lymph nodes. Then use a spatula to inspect the porcupine and oral cavity. Attention is paid to the condition of the mucous membrane of the lips, cheeks, gums, condition of the teeth and tongue. During the examination of the oropharynx, the patient should breathe with his mouth without projecting his tongue. Put the spatula on the front 2/3 of the tongue and press it down and slightly on itself. It should be remembered that pressing on the root of the tongue can cause a vomiting reflex. Pay attention to the condition of the mucous membrane of the palatine brackets, soft palate, back wall of the pharynx. Normally, the mucous membrane of these areas is pink, has no thickening. The condition of the palatine tonsils is determined during rotation by pressing another spatula on the anterior palatine brace. In doing so, they detect the presence of content in the lacunae of the palatine tonsils. Examining the back of the pharynx, it is possible to find both individual granules of lymphadenoid tissue, and significant accumulation of it, especially on the posterior walls of the pharynx behind the palatal brackets - lateral rollers of the pharynx.

Posterior rhinoscopy

The examination of the nasopharynx is performed using a nasopharyngeal mirror and a spatula. The spatula, which is held with the left hand, press the tongue in the front 2/3 of it and ask the patient to breathe with his nose. Prior to this, the nasopharyngeal mirror heated by alcohol is carefully inserted behind the soft palate into the oropharynx by the mirror surface upwards, without touching the root of the tongue and the back wall of the pharynx. By illuminating the mirror and changing the angle of view, they examine the nasopharynx in the reflected light. Normally, the mucous membrane in the vault of the nasopharynx is pink, hoans are free and symmetrical, the bladder is located along the the middle line. On the lateral walls of the nasopharynx, at the level of the posterior ends of the lower nasal shells, there are small depressions - pharyngeal openings of the auditory tubes.

The arch of the nasopharynx contains the pharyngeal tonsil, which can be hypertrophied - adenoid vegetation. Infants and young children are often finger-examined for nasopharyngeal examinations. To do this, the assistant doctor puts the baby on his knees and holds it. The doctor, standing to the side and slightly behind, inserts the index finger of his right hand into his mouth, and then over the soft palate into the nasopharynx, examining the finger of its wall; at the same time, with the finger of the left hand, it is necessary to squeeze the baby's cheek between the upper and lower teeth to prevent the bite. Normally, the nasopharynx is free. In the anterior sections palpate hoans, braziers. In the presence of adenoid vegetations, they reveal a soft-elastic lobular formation in the nasopharynx, which may block the Hoan.

Laryngoscopy

Indirect laryngoscopy is performed using a laryngeal mirror, which is then heated by an alcohol. During the examination, the patient's extended tongue is held with the left hand by a gauze cloth. The laryngeal mirror is inserted through the oral cavity, with the mirror surface down. Without touching the root of the tongue and the back of the pharynx, the soft palate with the tongue is pushed up and back. The mirror clearly shows the epiglottis, molecules, scalloped-sutured folds, scalloped cartilage, vestibular and vocal folds, lining, voice gap. Attention is paid to the color of the mucous membrane, as well as the mobility of the vocal folds during breathing and phonation, the pronunciation of vowels "yes" or "and". At the same time with laryngoscopy, examination of the laryngopharynx -

hypopharyngoscopy. At the same time inspect the root of the tongue, lingual tonsils, molecules, pear-shaped nooks and crannies. Direct laryngoscopy is performed using a laryngoscope. The patient lies on his back with his head thrown back. The laryngoscope is conducted through the oral cavity, the root of the tongue is pushed up and at the same time the instrument is guided to the larynx. The beak of the laryngoscope blade is captured and squeezed by the epiglottis and the root of the tongue. This is the location. The tool provides a direct overview of all the pharyngeal, laryngeal and upper tracheal divisions.

Otoscopy

Ear examinations begin with an examination of the auricle and the auricle and the adjacent head, neck and face. Palpation and percussion of the mastoid process are then performed.

Otoscopy is performed using a frontal reflector and ear funnels of different sizes. The initial external auditory can be viewed without ear canal. The ear canal of the right size is inserted into the external auditory canal to the isthmus, holding the thumb, forefinger and middle fingers of the hand over the rim. The external auditory course is straightened by pulling the auricle in adults and older children upwards, backwards and outwards, and in younger children - downwards and backwards. Normally, the external auditory course is free, the skin is pale pink. Drum gray, shiny, with a pearly hue. It distinguishes the obligatory formations - cognitive features or points: the handle of the hammer, its lateral process, the front and back hammer folds, the light reflex, the navel. Normally, the eardrum is movable, which is determined by the pneumatic ear can of Sieglie. Microotoscopy is performed using an operating microscope, which allows to determine the details of the structure of the tympanic membrane and pathological changes on it. This clearly shows the nature of perforation, granulation, polyps, the condition of the mucous membrane of the medial wall of the tympanic cavity.

Independent student's work.

Students learn the method of working with the frontal reflector, conduct anterior rhinoscopy, oropharyngoscopy, posterior rhinoscopy, indirect laryngoscopy and otoscopy.

THE FINAL STAGE OF THE EMPLOYMENT

1. Determining the final level of students' knowledge. Solution to situational problems, work with test tasks.
2. Summary of the lesson

Analysis of the achievement of revenge practical training. Define the topic of the following practical lessons and tasks for him.

CONTROL QUESTIONS

I. Method of examination of the auditory and vestibular analyzers

1. What anatomical formation connects the auditory tube?
+ Tympanic cavity and nasopharynx.
- Tympanic cavity and oropharynx.
- Tympanic cavity and larynx.
- Inner ear and throat.
- Perilymphatic space with subarachnoid.
2. What is the function of the ear?
+Horn function for collecting sound waves.
- Soundconductio.
- Soundreception.
- Aesthetic function.
- The function of the peripheral department of the auditory analyzer.
3. Name the auditory bones. What is their function?
+Malleus, uncus, stape. Their function is sound conduction and amplification.
- Malleus, uncus. Their function is sound perception and amplification.
- Malleus, uncus, stape. Their function is sound conduction and sound attenuation.
- Malleus, uncus, stape. Their function is sound perception and sound attenuation.
- Malleus, uncus, stape.Their function is to conduct sound and determine the origin of sound.
4. Where is the auditory receptor receptor located and what is it represented?

+ In the inner ear, in the cochlea, is represented by a spiral organ.
- In the inner ear, in the vestibulum, represented by a spiral organ.
- In the inner ear, in the cochlea, is represented by an otolith apparatus.
- In the middle ear, in the cochlea, is represented by a spiral organ.
- In the inner ear, in the cochlea, is represented by an ampopular apparatus.
5. In which cranial fossa is the ear infection spread? Why?
+ Middle and posterior cranial fossa. This is due to the close location of these anatomical entities.
- In the anterior and posterior cranial fossa. This is due to the close location of these anatomical entities.
- In the anterior and middle cranial fossa. This is due to the close location of these anatomical entities.
- Middle and posterior cranial fossa. This is due to the features of the outflow of blood from the ear.
- To the posterior cranial fossa. This is due to the features of the outflow of blood from the ear.
6. Through what cerebral venous sinus is an ear infection generated?
+ Through the sigmoid sinus.
- Through the cavernous sinus
- Through the transverse sinus
- Through the sigmoid and cavernous sinuses.
- Through the cavernous and transverse sinuses.
7. In which vein passes the sigmoid sinus? Through what formation?
+ Into the internal jugular vein through the bulb of the inner jugular vein.
- Into the labyrinth vein and lower stony sinus.
- Intra jugular vein through the transverse sinus.
- To the external jugular vein through the bulb of the external jugular vein.
- In the inner jugular vein through the wing visible plexus.
8. What are the anatomical formations that make up the sound system?
+ Ear, external auditory canal, eardrum, auditory bones, inner ear fluid, inner ear membranes.
- Ear, external auditory course, eardrum, chain of auditory bones.
- Ear, external auditory course, eardrum, chain of auditory bones, fluid of inner ear.
- Ear, tympanic membrane, ear canal chain, inner ear fluids, inner ear membranes.
- Auricle, external auditory course, eardrum, chain of auditory bones, fluid of inner ear, spiral organ.
8. Why do older people often notice hearing loss?
+ Due to age-related changes in the degenerative nature of the spiral organ.
- Due to age-related changes in the degenerative nature of the eardrum.
- Due to age-related changes in ankylosis (immobility) of stirrups.
- Due to age-related changes in the auditory nerve, the cortical department of the auditory analyzer.
- Due to age-related changes in the degenerative nature of the sounding apparatus.
10. What occupational hazards can adversely affect the hearing organ?
+ Intense noise, vibration.
- Intense noise, barotrauma.
- High frequency noise, vibration.
- Low frequency noise, vibration.
- Intense noise, acoustic trauma.
11. Why is it recommended to open your mouth when firing a gun?
+ For equalization of atmospheric pressure in the middle ear cavities and the surrounding atmosphere.
- For equalization of atmospheric pressure in the inner ear and the surrounding atmosphere.
- For equalization of lymphatic feather pressure and labyrinthine endolymph.
- For equalization of atmospheric pressure in middle ear cavities and endolymph pressure.
- For equalization of atmospheric pressure in the middle and inner ear cavities.
12. What should a passenger do when taking off and landing an aircraft to prevent damage to their ears? Why?
+ Swallow movements to open the pharyngeal opening of the auditory tube.
- Align the labyrinth pressure with head movements.
- Close your mouth and nose to open the pharyngeal opening of the auditory tube.
- Hold your breath for breath to open the pharyngeal opening of the auditory tube.

- Make swallowing movements to balance the pressure of labyrinthine fluids.
13. What can be explained by the fact that Ludwig Vai Beethoven clamped one end of his stick with his teeth and put the other on the piano for better sound perception?
+ Beethoven used bone-tissue conduction of sounds.
- Beethoven amplified the aerial conduct of sounds.
- Beethoven intensified the work of the auditory bone.
- Beethoven used vibrating sound.
- Beethoven used a stick as a hearing aid.
14. Who is Helmholtz? What is its contribution to otolaryngology?
+ German physicist and physiologist who developed resonance hearing therapy.
- German physicist and physiologist who developed hydrodynamic hearing therapy.
- German physicist and inventor who created the first hearing aid.
- German physicist and physiologist who developed the rotational test.
- German physicist and inventor who developed the calorie test.
15. Hamlet's father was killed by infusion of poison into his ear. How can this be explained?
+ Perforation of the tympanic membrane and penetration of the poison through the auditory tube into the throat.
- Perforation of the tympanic membrane and suction of poison in the tympanic cavity.
- Perforation of the tympanic membrane and penetration of poison into the cavity of the skull.
- Perforation of the tympanic membrane and penetration of the poison into the inner ear.
- Perforation of the tympanic membrane and the entry of poison through the internal auditory passage into the brain stem.
16. What characterizes the pitch and in what units is it measured?
+ It is characterized by the frequency of oscillation and is measured in Hertz (Hz).
- It is characterized by the frequency of oscillation and is measured in decibels (dB).
- It is characterized by the force of oscillation and is measured in Hertz (Hz).
- It is characterized by the sound pressure of oscillations and is measured in Hertz (Hz).
- Characterized by sound pressure and measured in decibels (dB.
17. What characterizes the sound power and in what units is it measured?
+ It is characterized by sound pressure and is measured in decibels (dB).
- It is characterized by the frequency of oscillation and is measured in Hertz (Hz).
- It is characterized by the frequency of oscillation and is measured in decibels (dB).
- It is characterized by the force of oscillation and is measured in decibels (dB).
- It is characterized by the sound pressure of oscillations and is measured in Hertz (Hz).
18. Where are the receptors of the vestibular analyzer located and what are they?
+ In the inner ear: in the sacs of the breast and the ampoules of the semicircular canals, and are represented by an otolith, you are an ampoule apparatus.
- In the inner ear: in the vestibule and the curl and represented by the otolith apparatus and the spiral organ.
- In the inner ear: in the curl and ampoules of the semicircular canals and represented by the spiral organ, you are an ampoule apparatus.
- In the middle ear: in the sacs of the breast and the ampoules of the semicircular canals and are represented by an otolith, you are an ampoule apparatus.
- In the inner ear: in the sacs of the prisons and ampoules of the semicircular canals, and are represented by the otolith cochlear apparatus.
19. What function does the vestibular analyzer perform?
+ Function of balance in a state of rest and movement.
- Function of balance at rest.
- The function of maintaining balance when changing the position of the body in space.
- Dynamic balance function.
- Function for maintaining static balance when turning the head.
20. Why does external auditory skin irritation often cause coughing?
+ Due to joint innervation of skin of external auditory canal and mucous membrane of throat and larynx by vagus nerve.

- Due to joint innervation of the skin of the external auditory canal and the mucous membrane of the pharynx with the help of a drum string.
- Due to the reflex connections of the sulfur glands and the mucous membrane of the throat and larynx.
- Due to the physiological auriculo-bronchial reflex.
- Due to pathological impulse from the skin of the external auditory canal to the mucous membranes of the pharynx and larynx. Carried out by the trigeminal nerve.
21. List the meningeal symptoms.
+ Symptom of rigidity of occipital muscles, Kernig's symptom, symptoms of upper and lower Brudzinski.
- Symptom of stiff neck, Kernig's symptom, Orleans upper and lower symptoms.
- Symptom of rigidity of occipital muscles, Kernig's symptom, nausea, vomiting, dizziness.
Symptom of rigidity of occipital muscles, hypertension symptom, symptoms of Brudzynsky upper and lower.
- Symptom of rigidity of occipital muscles, symptoms of Babin's upper and lower, positive reactions of Pandey.
22. How do the eyes respond in response to severe sound irritation? Is it possible to detect deafness in this way?
+ Pupil narrowing and blinking. Deafness can be estimated approximately.
- Pupil enlargement and blinking. Deafness can be estimated approximately.
- Pupil narrowing and blinking. Deafness can be detected definitively.
- Pupil enlargement and blinking. Deafness can be detected definitively.
- Narrowing and dilating the pupil and blinking. It is impossible to detect deafness.
23. Name the departments of the hearing analyzer.
- Peripheral, conductive, cortical.
- Peripheral, conductor, central.
- Perceiving, conductive, central.
- Sound, sound, analyzing.
- Peripheral, cochleo-vestibular, cortical.
23. Why are deaf people listening to their mouths open?
+ For conducting sound through the auditory tube that provides. improving hearing.
- To enhance the resonance it provides. improving hearing.
- For enhanced bone conduction providing. improving hearing.
- For audio through the auditory tube, which enhances the sound perception.
- To deliver sound to the lower respiratory tract it provides. improving hearing.

II. Method of examination of the nose and paranasal sinuses

1. How to explain the possibility of the spread of infection from the nose and paranasal sinuses into the orbit and skull cavity?
+ Community of the venes and anatomical contiguity.
- Possibility of hematogenous spread of infection.
- Community of blood supply and innervation.
- Possibility of contact path of infection.
- Simultaneous lesions of several anatomical entities.
2. Through which brain venous sinuses is the infection of the nose and paranasal sinuses generalized?
+ Through the cavernous and upper sagittal sinuses.
- Through the cavernous and inferior sagittal sinuses.
- Through the sigmoid and upper sagittal sinuses.
- Through the sigmoid and lower sagittal sinuses.
- Through cavernous and sigmoid sinuses.
3. With what anatomical formations does the frontal sinus border?
+ Anterior cranial fossa, orbit.
- Middle cranial fossa, orbit.
- Anterior, middle cranial fossa, orbit.
- Anterior cranial fossa, sigmoid sinus.
- Middle cranial fossa, orbit, ethmoidal sinus.

4. With what anatomical formations does the maxillary sinus border?
+ Nose, orbit, alveolar process.
- The nasal cavity, the orbit, the mastoid process.
- Oral cavity, orbit, zygomatic process.
- Nasal cavity, canine fossa, alveolar process.
- Oral cavity, orbit, mastoid process.
5. With what anatomical formations does the ethmoidal of the sinus border?
+ Anterior cranial fossa, orbit, nasal cavity.
- Middle cranial fossa, orbit, nasal cavity.
- Anterior cranial fossa, orbit, nasal cavity.
- Middle cranial fossa, orbit, pituitary gland.
- Nasopharynx, anterior and middle cranial fossa, pituitary gland, cavernous sinus.
6. With what anatomical formations does the sphenoidal sinus border?
- Nasopharynx, anterior and middle cranial fossa, pituitary gland, cavernous sinus.
- Anterior cranial fossa, orbit, nasal cavity.
- Nasopharynx, anterior and middle cranial fossa, pituitary, sigmoid sinus sinus.
- Oropharynx, anterior cranial fossa, pituitary gland, cavernous sinus.
- Throat, anterior and middle cranial fossa, pituitary, sagittal sinus
7. What is a nasal conch? What do they form?
+ The lower nasal conch is an independent bone, the middle and upper are the processes of the cuneiform bone. They form the nasal passages.
- The lower nasal conch is the process of the upper jaw, the middle and upper - the process of the lattice and frontal bones, respectively. They form nasal passages.
- The lower nasal conch is an independent bone, the middle and upper are the processes of the maxillary bone. They form the nasal sinuses.
- The lower nasal conch is the process of the palate, the middle and upper - the processes of the trellis and frontal bones, respectively. They form nasal passages.
- The lower nasal conch is an independent bone, the middle and upper are the processes of the lattice. They form the nasal sinuses.
8. What is the significance of the knowledge that nasal bleeding arises from the vessels of the external and internal carotid arteries?
+ When bleeding from the external carotid system, it can be bandaged, and ligation of the internal carotid artery can soften the brain.
- In case of bleeding from the internal carotid system, it can be bandaged, and ligation of the external carotid artery can lead to softening of the brain.
- In case of bleeding from the external carotid system, it can be bandaged, and bandaging of the internal carotid artery is technically impossible.
- With bleeding from the external carotid system, it cannot be bandaged, and ligation of the internal carotid artery can soften the brain.
- In case of bleeding from the system of external and internal carotid artery, they can be tied up to ensure a definitive stop of bleeding.
9. In which two areas is the mucous membrane of the nasal cavity divided?
+ Respiratory and olfactory.
- Respiratory and moisturizing.
- Cleansing and olfactory.
- Respiratory and secretory.
-Mucociliary and olfactory.
10. What are the functions of the nose.
+ Respiratory, olfactory, protective, resonant.
- Respiratory, olfactory, protective, aesthetic.
- Respiratory, olfactory, protective, warming.
- Respiratory, olfactory, cleansing, warming.
- Respiratory, olfactory, warming, hearing-enhancing.
11. List the paranasal sinuses.

+ Maxillary, frontal, sphenoidal, ethmoidal.
- Maxillary, frontal, cavernous, ethmoidal.
- Maxillary, frontal, sphenoidal, mastoid.
- Gaimorov, sigmoid, basic, etmoidal.
- Maxillary, transverse, main, lattice.
12. Through which anatomical formations does the voice become individually colored?
+ Throat, nasal cavity, paranasal sinuses, height of hard palate curvature.
- Larynx, nasal cavity, oropharynx, height of curvature of hard palate.
- Throat, paranasal sinuses, hard palate, vocal folds.
- The larynx, the nasal cavity, the nasopharynx, the height of the curvature of the hard palate.
- The pharynx, the shape of the larynx, the paranasal sinuses, the tone of which is the palate.
13. In what direction do the cilia of the mucous membrane of the nasal cavity move?
+ From the nostrils to the hoan.
- Circular.
- From Hoan to Nostrils.
- In both directions.
- In the direction of the sinuses.
14. Which artery is bandaged with severe nasal bleeding? At what level?
+ The external carotid artery is ligated above the branch of the lower thyroid artery.
- The internal carotid artery is ligated above the branch of the lower thyroid artery.
- Bandage the external carotid artery below the branch of the lower thyroid artery.
- Bandage the internal carotid artery below the branch of the lower thyroid artery.
- Tie the external carotid artery in an accessible location.
15. What are called openings, which open the nasal cavity in the nasopharynx?
-+ Choana.
- Nostrils
- Nasal passages
- Pharyngeal tidings
- Nasopharyngeal cells
16. Which half of the nose is wider?
+ More often right.
- More often left.
- Normally symmetrical.
- Depends on the dominant half of the brain
- Individually.
17. In which cerebral venous sinus do the orbital veins fall?
+ In the cavernous sinus.
- In the sagittal sinus.
- The sigmoid sinus.
- The sphenoid sinus.
- The etmoid sinus.
18. What is the dangerous boil of the nose?
- Infection into the orbit and cavity of the skull is possible.
- Infection into the orbit and paranasal sinuses is possible.
- Infection of the throat and cerebral sinuses is possible.
- Infection of the bronchi and the cranial cavity is possible.
- Infection of nasopharynx and cerebral sinuses is possible.
19. Which channel connects the conjunctival sac and the nasal cavity? Where does it open in the nasal cavity? What is its function?
+ The nasal canal, which opens in the lower nasal passage. Its function is to hold tears.
- The lacrimal-nasal canal, which opens in the middle nasal passage. Its function is - moistening of the nasal cavity.
- The nasal canal, which opens in the lower nasal passage. Its function is to hold tears.
- Eye-nasal canal, which opens in the middle nasal passage. Its function is to moisten the nasal cavity

- The lacrimal-nasal canal, which opens in the upper nasal passage. Its function is to hold tears.
20. What is the movement of cerebrospinal fluid?
+ Thanks to nasal breathing.
- Thanks to swallowing.
- Due to endolymph current.
- Due to irritation of nerve endings.
- Thanks to the CSF receptors.
21. What happens to air when it passes through the nasal cavity?
+ The air is humidified, warmed, cleansed.
- The air is humidified, swirled, cleaned.
- The air is humidified, warmed, decontaminated.
- The air condenses, warms, cleans.
- The air is humidified, decontaminated, cleaned.
22. What amount of secretions secretes the mucous membrane of the nasal cavity per day? What is the practical significance of this?
+ About 500 ml. Moisturized air is inhaled.
- About 50 ml. The exhaled air is moistened.
- About 120 ml. Moisturized air is inhaled.
- About 800 ml. The exhaled air is moistened.
- About 1300 ml. Moisturized air is inhaled.
23. Does the air flow through the left and right halves of the nose mix in the airways?
+ Mixed, though not completely.
- Mixed completely.
- Does not mix.
- Mixed in pathology.
- Does not mix with mouth breathing.
24. What can explain the good healing of wounds on the face?
+ Rich arterial blood supply to the tissues on the face.
- Features of the skin skin.
- No primary surgical treatment of the wound is performed on the face.
- Fuzzy blood supply to the tissues on the face.
- Proximity to the carotid arteries.
25. Where is the bleeding area of the nose?
+ In the anterior part of the nasal septum.
- In the middle section of the nasal septum.
- In the area of the lower nasal conch.
- In the bone section of the nasal septum.
- In the middle nasal passage.
26. Where is the olfactory zone located?
+ Upper conch, upper middle conch, upper nasal septum.
- Lateral nasal wall, nasal shells.
- Lower sink, lower middle sink, lower nasal septum.
- Lower sink, lower middle sink, olfactory bulb.
- Upper and middle nasal passages, olfactory bulb
27. Where is the olfactory gap?
+ Between the nasal septum and the middle nasal conch.
- Between the nasal septum and the upper nasal conch.
- Between the upper and middle nasal conch.
- Between the nasal septum and the lower nasal conch.
- Between the lower and middle nasal conch.

Method of examination of the pharynx, larynx, trachea and esophagus

1. What parts is the throat divided into?
+ Nasopharynx, oropharynx, laryngopharynx.
- Nasopharynx, oropharynx, larynx.

- Nasopharynx, oropharynx, laryngopharynx.
- Nasopharynx, oropharynx, laryngopharynx.
- Nasopharynx, oropharynx, laryngopharynx.
2. At what level does the pharynx pass into the esophagus?
+ At level VI of the cervical vertebra.
- At level VI of the thoracic vertebra.
- At the level of the IV cervical vertebra.
- At the level of the IV cervical vertebra.
- At level II of the cervical vertebra.
3. What does the nasopharynx go with?
+ With nasal cavity, auditory tubes, oropharynx.
- With nasal cavity, auditory tubes, larynx.
- With the nasal cavity, Hoan, oropharynx.
- With spheroid sinus, auditory tubes, oropharynx.
- With nasal cavity, middle ear, oral cavity.
4. What is the limited orifice?
+ Palatine brackets, palatine tonsils, soft palate, root of tongue.
- Almond brackets, palatine tonsils, firm palate, root of the tongue.
- Palatine brackets, pharyngeal tonsils, soft palate, root of tongue.
- Almond brackets, palatine tonsils, hard palate, epiglottis.
- Palatine brackets, lingual tonsils, soft palate, epiglottis.
5. What are the tonsils that make up the lymphadenoid pharyngeal ring?
+ Two palatine, two tubular, pharyngeal and lingual.
- Two palatine, two pharyngeal, tubular and lingual.
- Two trumpet, two trumpet, larynx and lingual.
- Two pharyngeal, two lingual, tubular and palatine.
- Two larynx, two tubular, pharyngeal and adenoid.
6. What is rhinolalia? What are its variants?
+ rhinolalia - a change in the tone of the voice and distortion of the sound, due to the violation of the resonator function of the nasal cavity. The crowding happens, open (the stillness of the soft palate causes the nasopharynx and nasal cavity not to be separated from the oropharynx) and closed (the nasal cavity or nasopharynx is filled with any formation).
- rhinolalia - a change in the tone of the voice and distortion of the pronunciation of sounds, which is caused by a violation of the respiratory function of the nasal cavity. The crowding happens, open (motionless soft palate causes the larynx and nasal cavity to separate from the oropharynx) and closed (the nasal cavity or nasopharynx filled with any formation).
- rhinolalia - a change in the tone of the voice and distortion of the sound, due to the violation of the resonator function of the nasal cavity. Opposition may be complete (stillness of the soft palate causes the nasopharynx and nasal cavity not to be separated from the oropharynx) and incomplete (nasal or nasopharyngeal cavity filled with any formation).
- rhinolalia - a change in the tone of the voice and distortion of the pronunciation of sounds, which is caused by a violation of the respiratory function of the nasal cavity. The crowding happens, open (the stillness of the soft palate causes the nasopharynx and nasal cavity not to be separated from the oropharynx) and closed (the nasal cavity or nasopharynx is filled with any formation).
- rhinolalia - a change in the tone of the voice and distortion of the sound, due to the violation of the resonator function of the nasal cavity. Opposition is complete (soft palate immobility causes the nasopharynx and nasal cavity not to be separated from the oropharynx) and partial (nasal or nasopharyngeal cavity filled with any formation).
7. What muscles underlie the anterior and posterior palatal brackets?
+ Palatine-lingual and palatine-pharyngeal muscles.
- Palatine-trumpet and musculoskeletal muscle.
- Palatine-lingual and parietal-trumpet muscle.
- Palatine-buccal and musculoskeletal muscles.
- Palatine-lingual and suborbital-shilgary pharyngeal muscle.

8. Why are pathological processes in the pharynx and larynx often accompanied by pain that irritates the ear?
+ This is due to the community of innervation of the vagus and trigeminal nerves.
- This is due to the community of innervation of the vagus and glossopharyngeal nerves.
- This is due to the community of innervation of the laryngeal and trigeminal nerves.
- This is due to the community of innervation of the facial and trigeminal nerves.
- This is due to the community of innervation of the vagus and facial nerves.
9. Name the physiological narrowing of the esophagus.
+ Upper narrowing - entrance to the esophagus; middle - aortic arch; lower - diaphragmatic.
- Upper narrowing - entrance to the esophagus; middle - bifurcation of the trachea; lower - diaphragmatic.
- Upper narrowing - larynx; middle - bifurcation of the trachea; lower - cardiac.
- Upper narrowing - entrance to the esophagus; middle - aortic arch; lower - diaphragmatic.
- Upper narrowing - thyroid; middle - aortic arch; lower - cardiac.
- Upper narrowing - larynx; middle - aortic bifurcation; lower - diaphragmatic.
10. List the departments of the esophagus
+Cervical, thoracic, abdominal.
- Pharyngeal, mediastinal, abdominal
- Cervical, larynx, parietal
- Larynx, mediastinal, abdominal
- Tracheal, thoracic, breastfeeding
11. What dangerous the patient with perforation of the esophagus?
+ Development of mediastinitis.
- Development of periezophagitis.
- Development of pleurisy.
- Peritonitis development.
- Development of neck phlegmons.
12. Why are older esophageal bodies more common in older people?
+ This is due to an age-related decrease in the sensitivity of the oral mucosa and the dental factor.
- This is due to an age-related decrease in the sensitivity of the oral mucosa and dietary characteristics.
- This is due to age-specific diet and dental factor.
- This is due to age-related decline in esophageal tone and dental factor.
- This is due to age-related decrease in the sensitivity of the oral mucosa and violation of the tone of the esophagus
13. List the protective mechanisms of the larynx.
+ Lowering of the epiglottis, spasm of the internal muscles of the larynx, cough reflex.
- Lifting the epiglottis, spasm of the external muscles of the larynx, cough reflex.
- Lowering of the epiglottis, paresis of the internal muscles of the larynx, cough reflex.
- Lifting the epiglottis, relaxation of the internal muscles of the larynx, vomiting reflex.
- Lowering of the epiglottis, spasm of the external muscles of the larynx, vomiting reflex.
14. What was used by otolaryngologists in the practice of circus art? For what purpose?
+ Experience of swallowing to develop esophagoscopy techniques.
- Respiratory experience for developing esophagoscopy techniques.
- Experience in swallowing to develop laryngoscopy techniques.
- Experience of swallowing for the development of bronchoscopy techniques.
- Respiratory retardation experience for developing bronchoscopy techniques.
15. What is a (valleculae epiglotticae) valleculae? What is their practical value for an otolaryngologist?
+ Depression between the lingual surface of the epiglottis and the root of the tongue. They are trapped by small fish bones.
- Depression between the laryngeal surface of the epiglottis and the root of the tongue. Malignant tumors are masked.
- Depression between the lingual surface of the epiglottis and the tonsils. They are trapped by small foreign bodies.
- Deepening between the vocal folds and vestibular folds. They mask malignant tumors

- Depths on the lateral surfaces of the larynx. They are trapped by small fish bones.
16. What are pear-shaped recesses? What are they moving into?
+ This is the depression between the side of the pharynx and the larynx, which pass into the esophagus.
- Depression between the laryngeal surface of the epiglottis and the root of the tongue, which pass into the larynx.
- This is the depression between the side of the pharynx and the larynx, which pass into the nasopharynx.
- Depression between the lingual surface of the epiglottis and the root of the tongue, which pass into the larynx.
- It is the recess between the side of the pharynx and the larynx, which pass into the larynx.
17. What is a Passavan roller? What is its function?
+ Transverse roller on the back wall of the pharynx, which is formed by the reduction of its upper constrictor. During swallowing, it contacts the soft palate and separates the nasopharynx from the oropharynx.
18. What are the pathways in the throat?
+ Respiratory and esophageal.
- Respiratory, olfactory and esophageal.
- Respiratory and olfactory.
- Respiratory and vestibular.
- Olfactory and esophageal.
19. Where is the retropharyngeal space located?
+ Between the vertebral fascia and pharyngeal adventitia.
- Between the vertebral fascia and the muscular layer of the pharynx.
- Between the vertebral fascia and the mucous membrane of the pharynx.
- Between the lateral pharyngeal fascia and the muscular layer of the pharynx.
- Between the vertebral fascia and the larynx.
20. How does the soft palate move during swallowing?
+ It rises and protects the nasopharynx from the oropharynx.
- It descends and protects the nasopharynx from the oropharynx.
- It rises and protects the larynx from the oropharynx.
- It descends and protects the nasopharynx from the larynx.
- It rises and protects the oropharynx from the larynx.
21. List the larynx cartilage.
+ Cricoid, thyroid, arythenoid, horny, cliniform and epiglottis.
- Conical, thyroid, scalloped, conical, wedge-shaped and epiglottis.
- Ring-shaped, thyroid, scooped, horny, crocheted and epiglottis.
- Ring-shaped, thyroid, scalloped, horny, wedge-shaped and epiglottis.
- Ring-shaped, thyroid, crocheted, horny, conical and epiglottis.
22. Which parts are the larynx divided into?
+ Upper or laryngeal vestibule, middle or glottic, and lower or subglottic, space.
- Front, or upper, middle, or folding, and rear, or folding, space.
- Upper or laryngeal larynx, middle, or peritoneal, and lower, or lining, space.
- Anterior or laryngeal vestibule, median, or folding, and posterior or non-folding, space.
- Upper or laryngeal, middle or folded, and lower or tracheal space.
23. What function do the external muscles of the larynx perform?
+ Raise and lower the larynx.
- Control the epiglottis.
- Manage voice folds.
- Manage vestibular folds.
- Tension the vocal folds.
24. What functions do the internal muscles of the larynx perform?
+ Extend and narrow the glottis, tighten the vocal folds, control the epiglottis.
- Raise and lower the larynx, relax the vocal folds, open the epiglottis.
- Expand and narrow the glottis, tighten the caudal folds, control the epiglottis.

- Raise and lower the larynx, tighten the vocal folds, control the epiglottis.
- Extend and narrow the glottis, relax the vocal folds, close the epiglottis.

25. List the functions of the larynx?
+ Respiratory, protective and vocal.
- Esophageal, swallowing and voice.
- Respiratory, protective and resonant.
- Esophageal, protective and vocal.
- Resonator, protective and swallowing.

26. Why is it possible to develop laryngeal paralysis during a thyroid surgery?
+ Due to damage to the recurrent nerve.
- Due to damage to the upper laryngeal nerve.
- Due to damage to the internal muscles of the larynx.
- Due to damage to the external laryngeal muscles.
- Due to damage to the isthmus of the larynx.

27. What part of the larynx is damaged in acute laryngotracheitis in children?
+ The subglottic part of the larynx.
- Vestibular laryngeal department.
- Middle larynx.
- Pharyngeal larynx.
- Paraesophageal laryngeal department.

28. How did Zemsky doctors save the patients from suffocation with diphtheria?
+ By intubation of the larynx and suction of diphtheria films.
- By tracheostomy and administration of diphtheria serum.
- By conicotomy and suction of diphtheria films.
- By tracheostomy of the larynx and suction of diphtheria films.
- By conicotomy of the larynx and administration of diphtheria serum

29. What is the function of the epiglottis?
+ Closes the entrance to the larynx during swallowing.
- Opens the entrance to the larynx during swallowing.
- Closes the entrance to the esophagus during swallowing.
- Opens the entrance to the esophagus during swallowing.
- Opens the entrance to the throat during swallowing.

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4. www.dec.gov.ua/mtd/home/ - State Expert Center of the Ministry of Health of Ukraine
5. http://bma.org.uk– British Medical Association
6. www.gmc-uk.org- *General Medical Council* (*GMC*)
7. www.bundesaerztekammer.de – German Medical Association

Practical lesson 2

Topic: Clinical anatomy, physiology and methods of examination of cochlear apparatus.

Aim of the lesson. Diseases of ear, upset of hearing function is one of the most frequent pathology of human being. Establishment of diagnosis, choice of rational tactics is impossible without the knowledge of clinical anatomy, physiology, and methods of examination of hearing function. Auditory analyzer plays the main role in the perception of the world and helps to form the speech function. The pathology of the auditory analyzer often leads to dull hearing and deafness, which affect man's capacities for work and his moral state. Inflammatory diseases of the ear can have bad and dangerous complications for mental processes. It's necessary to comprehend clinical anatomy and physiology of the auditory analyzer to master the main methods of its investigation. This will enable one to grasp how infection spreads from the ear into the scull cavity and the mechanisms of diminished hearing and deafness development.

Student must know:

- Possess idea about anatomo-physiological relations of ear with surrounding formations, about effect of different factors on the organ of hearing, know modern methods of examination of hearing analysator.
- Clinical anatomy and physiology of external and middle ear.
- Methods of examination of ear: otoscopy, define passage Eustachian tube, mobility of tympanic membrane.
- For attribution of aim it's necessary of basic knowledge of anatomy of temporal bone, possess idea about basic parts of external and middle ear.
- Clinical anatomy, physiology of the acoustic analysator

To be able:

- Conduct the investigation of the ear by speech and tuning fork;
- Draw up the acoustic passport and be able to do the conclusion about the state of acoustic function;
- Estimate the findings of the threshold audiometry.

For realization the purposes are necessary the basis knowledge by:

- Physical characteristics of the sound, acoustic sensations, sounds measuring, acoustics impedance;
- The structure of temporal bone: external, middle and internal ear; labyrinth,;
- Physiology of acoustic analysator.

Classroom equipment

1. Tools for performing endoscopic examination of ENT organs: nasal mirrors, spatulas, rear rhinoscopy mirror, laryngeal mirrors, ear funnels.
2. Schemes, tables, slides, models.
3. Tests to determine the initial level of knowledge.
4. Situational tasks for final control of students' level of knowledge.

Plan

№№	The name of the composition of the class	Hour
I.	Organizational moment (greetings, checking those present, announcing the topic, the purpose of the lesson, motivating students to study the topic).	7
II.	Control of supporting topics.	38
2.1	Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units).	8
2.2	Questions (test tasks, problems, clinical situations) to check basic knowledge on the subject of the lesson.	30
III.	Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.).	40
3.1	Content of tasks (tasks, clinical situations, etc.).	20
3.2	Recommendations (instructions) for performing tasks (professional algorithms, orienting maps for the formation of practical skills and abilities, etc.).	3

3.3	Requirements for work results, including to registration	2
3.4	Control materials for the final stage of the lesson: problems, tasks, tests, etc. (if necessary).	15
IV.	Summing up.	5

Assignment for self assessment of initial level of knowledge:

1. In which parts is the organ of hearing divided?
   a, b, c
2. Of which parts is the external ear made up?
   a, b, c
3 Into which parts is the temporal bone conditionally divided?
   a, b, c
4 Which cavities of middle ear do you know?
   a, b, c

Standards of answers for assignment:

1. a. External, b. Middle, c. Internal
2. a. Auricle, b. External acoustic passage,
3. a. Scaly part, b. Petrosus (stony) part, c. Tympanic part
4. a. Tympanic cavity, b. Cells of mastoid process, c. Eustachian tube

Task for self-control by the basis level knowledge:

1. What formation distinguish in membranous labyrinth? A); B); C); D); E)
2. Do you determine the basis links ways of acoustic analysator? A); B); C); D); E)
3. Does it increase breadth of the basis membrane of cochlea from the lower turn towards upper one ?
4. How is called the transference of the sound across bones of skull?

a) bone conduction
b) air conduction

5. What is happened with hairs of hearing cells of cortiev organ by oscillation of the basis membrane?
6. What person does mark the sensations in the ear by action strong sound?
   A); B)
7. What functions are of the sound perceptive apparatus?
8. What is the absolute hearing?
9. What the elements of external, middle and internal ear take part in conducting air widespread sounding wave?
   A); B); C);D); E);F); G); H); I)

Answers to task.

1. A)cochlear duct
   B)utriculus
   C)succulus
   D) semicircular canals
   E) endolymphatic duct and sac
2. A) spiral ganglion
   B) ventral and dorsal nucleus
   C) upper olives
   D) back hillock of lamina tecti
   E) bend of Geshlya
3. Yes
4. B
5. Contact with covering membrane.
6. A) pain; B) pressure
7. Transformation physical vibrations to nervous impulse.
8. A) ability for learn height of the sound

B) frequency in accord of sounds

9. A) pinna; B) external acoustic meathus; C) drum; D) chain auditory ossicles; E) perilimpha; F) endolimpha; G) Reisner`s membrane; H) basal membrane; I) membrane of the snail window

Organization of self-training.

Assignment	Instruction towards assignment
1. Three parts of ear.	1. Enumerate anatomical formations, entering into concept of external, middle & internal ear.
2. Anatomo-topographical peculiarities of external acoustic passage	1. Name two parts of external auditory passage. 2. Peculiarities of structure of skin of acoustic passage. 3. Clinical importance of topography of walls 4. Clinical importance of isthmus.
3. Clinical anatomy of tympanic cavity, its parts and contents.	1. Name the walls of tympanic cavity. 2. Floors of tympanic cavity. 3. Enumerate contents of tympanic cavity 4. Structure of tympanic membrane 5. Recognising points of tympanic membrane. 6. Draw right and left tympanic membranes, indicate recognising points and divide it into quadrates. 7. Enervation and blood supply of tympanic cavity.
4. Topography of facial nerve.	Name two sections of facial nerve.
5. Anatomo-physiological peculiarities of auditory passage.	1. Name two parts and localisation of opening of auditory tube. 2. Enumerate functions of auditory tube.
6. Mastoid process, its walls.	1. Name 4 types of structure of mastoid process. 2. Groups of cells of mastoid process. 3.Anotomo-topographical peculiarities of mastoid process - with middle cranial cavity - with posterior cranial cavity - by channel of facial nerve - by internal ear
7. Mechanism of sound conduction.	1. Enumerate anatomical formations, comprising sound conductive apparatus. 1. Explain transmittional and transformational functions of sound conduction system.
8. Methods of examination of sound conduction system.	1. Know the method of conduction of otoscopy. 2. Methods of examination of barofunction of ear: - method of examination of mobility of tympanic membrane - methods of examinations of permeability of auditory tube.
1.Clinical anatomy of the bony and membranous snail.	1. Anatomo-hystological peculiarities of snail structure. 2. Topography of snail, its bonds with others sections labyrinth and with neighboring anatomical formations. 3. Perilympha,endolympha (endolymphatic and perilymphatic space). 4. Blood supply of the snail, snail nerves. 5. Anatomy of VIII nerve.
2Physiology of acoustic analysator.	1. Basis physical characteristics corresponding acoustic analysator: Length and phase of sounds wave, amplitude and frequent of sounds vibrations. The units of measuring of frequent vibration and strength of the sound (tones). 2. The ways of sound conduction (ear bone), mechanism of sound condution.

	3. Theory of the ear. Mechanism of perception of the sound.	
Basic methods of examination of the ear. A) investigation with speech and tuning fork.	1. What is the speech examination? 2. The technique of examination of the ear by tuning fork. 3. Differential diagnosis of the defeats of soundconduction and soundperceiving systems. 4. Acoustic passport. 5. Peculiarity of audiogramm at different defeats of the ear. 6. Speaking, objective audiometria.	

Conduct self-control of acquired knowledge with the help of following tests (only after individual solution of the assignment see the key of correct answers).

1. Which anatomical formations compose the external ear?
a. pinna,
b. tympanyc membrana,
c. external acoustic meathus,
d. mastoidal processus
2. Which anatomical formations of pinna are deprived of cartilage?
a. – helix, b. – anthelix, c. – tragus, d. - lobe
3. Indicate the length of external acoustic meatus:
a. - 2 cm, b. - 2.5 cm, c. - 3.0 cm, d. - 3.5 cm,
4. Does the external acoustic meatus consist of cartilaginous and bony tissues?
5. Choose from the enumerated, which part of the external acoustic meatus forms cartilaginous part:.
a. - 1/3; b. - ½; c. - ¼; d. - 1/5.
6.Does the entrance into the antrum locates on the anterior wall of tymp. cavity?
7. Indicate how does the facial nerve pass in relation with the oval window:
a. - in front;
b. - from behind;
c. - from below;
d. - from above
8. Which muscles among the enumerated are the muscles of tympanic cavity?
a. – m.masseter;
b. - m.stapedius;
c. - m.tensor tympani;
9. Choose amongst the enumerated, which is the length of auditory tube.
a. - 2.5 cm; b. - 3.0 cm; c. - 3.5 cm; d. - 4.0 cm
10. Choose accordingly, what does bounded with the wall of tympanic cavity ?
1) Anterior 2) Posterior
a. - Cavern of mastoid process.
b. - Internal carotid artery .
11. Mention which recognising points of tympanic membrane are defined during otoscopy: a. ; b. ; c.; d.
12. Indicate in which part of auditory passage do furuncles arise.
13. Mention the walls of tympanic cavity.
14. Explain why during the introduction of funnel into the acoustic meatus and during its cleaning does cough arise ?
15.What does the tensed part differentiate from the flaccid part?
16. Which parts are present in the tympanic cavity?
a.; b.; c.
17. Describe the location of auditory ossicles, starting from tympanic membrane?
18. Indicate, which variants of structure the mastoid process possesses.
19. Enumerate the quadrants of tympanic membrane.
20. Which are peculiarities of acoustic meatus in children?
21. Does membrano-cartilaginous part is 2/3 the length of external acoustic meatus?
22. Does the softness of external acoustic meatus depend upon the Santorine fissures?

23 Are the walls of tympanic cavity covered by mucous layer?
24. Mention from the enumerated, changes of which wall of external acoustic meatus possess mainly importance for diagnosis of mastoiditis:
a. – superior;
b. – inferior;
c. - posterior
25. To which direction the pinna should be pulled during otoscopy?
a. - in children ;
b. - in adults
26. Indicate, which part of external acoustic meatus contains glands:
a. – bony;
b. - membrano - cartilaginous
27. Which anatomical formations join the tympanic cavity with nasopharinx?
a. - auditory tube;
b. - round window;
c. - oval window;
d. - internal acoustic meatus
28. Blood supply of external ear is fulfilled from system:
a. - of external carotid artery;
b. of external carotid and internal jaw artery
c.- internal carotid artery;
d. - external carotid and external jaw artery
e. - external jaw artery
29. Enervation of external acoustic meatus is fulfilled by ?
a. - abducent nerve; b. - trigeminal nerve;
c. - facial nerve; d. – n.vagus and
e- trigeminal nerves
30. Choose methods of examination:
1) Auditory tube 2) Mastoid process
a. external examination;
b. palpation;
c. cateterisation;
d. X - Ray examination

Standards of answers toward test control for self assesment:

1. a,c ; **2**. D; **3**. B; **4**. Yes; **5**. A; **6**. No; **7**. b,d; **8**. b,c; **9**. C; **10**. 1-b, 2-a; **11**.a) light cone; b) handle of malleus; c) short process; d) anterior and posterior folds; e) grey colour of tympanic membrane. **12**. In membrane - cartilaginous part. **13**. Anterior, internal, posterior, external, superior, inferior. **14**. Reflex from n.vagus. **15**. Presence of fibrous layer. **16**. a) Epitympanum. b) Mesotympanum. d) Hypotympanum. **17**. Malleus, incus, stapes. **18**. Pneumatic, diploetic, sclerotic, mixed. **19**. Anterio-superior, anterio-inferior, posterio-superior, posterio-inferior. **20**. Shorter, wider than in adults. **21**. No. **22**. Yes. **23**. Yes. **24**. B. **25**. a)back and downwards, b) back and upwards. **26**. B. **27**. A. **28**. B. **29**. D. **30**. 1 - c, 2 - a, b, d.

Conduct self-control acquitted knowledge.
1.What are components of the cochlea?
A,b,c,d,e,f,g,h,i.
2.What analysator receptors are placed in internal ear?
a) ;b)
3.Call the basis cells and elements of organ Corti:
a. b. c. d. e. f. g.
4.Call basis theories of the ear.
A . B. C. D. E.
5.Can you say that bone labyrinth represents the compact capsule?

6.Do cochlear bone canal have 2,5 rotations?
7.Is the cortiev organ on the Reismerov's membrane?
8.Has the acoustic organ section which realize the sound perceiving?
9.Indicate what function carry out: 1. Ear drum; 2.Cortiev organ
a)sound conduction
b)sound perceiving
10. What conducting the external acoustic passage,ear drum, acoustic ossicles treat:
a)air conducting
b)bone conducting
11. Does endolympha communicate with perylimpha?
12. Does internal acoustic passage communicate with posterior cranial fossa?
13.What liquid fill in tympanum staircase?
a)perilympha
b)endolympha
14.Does the basis membrane is the external wall of the snail?
15.What is call the broadcast of sound along the bones of skull?
a)air conducting b)bone conducting
16. Choice what investigation by turning fork are concern:
1.To bone conducting
2.To air conducting
a)for low frequent camertone
b)for high frequent camertone
17. What anatomic formation is compose the lower wall of the snail way?
18. Enumerate the methods of investigation of hearing:
19. What artery realizes the bloodsupply of internal ear?
A. B. C. D.
20. Choice: what turning fork executes the experiments for differential diagnosis of the defeat soundconducting and soundperceiving apparatus:
a)turning fork with frequency vibration 64 vib/sec.
b)turning fork with frequency 128 vib/sec.
c)turning fork with frequency 512 vib/sec.
21. What peculiarity of the ear give possibility to define exactly disposition of the side of sound?
22. Indicate what apparatus is defeat at the thrombosis acoustic artery?
23. What are criterion of the sound?
a); b); c)
24. What sounds are perceive worse?
1)by the defeat of soundconducting
2)by the defeat of soundperceiving
a) low; b) high; c) low and high

Methods of examination external and middle ear.

1. Divide into pairs.
2. Check the presence of necessary instruments: frontal reflector, nasal mirror, spatula, auricle funnel, auricle probe with cut, balloon of Politser, pneumatic funnel of Zigley, otoscope, auricle catheter, olive, cotton, 3% solution of ephedrine, boric spirit.
3. Make the patient sit down in front of you, with his knees to the right from you.
4. Put the lamp near the right ear of the patient.
5. Wear and tighten the reflector on your forehead.
6. Start towards examination of external and middle ear.
Examination: Turn your attention on paraauricular and postauricular region, form of pinna, colour of skin, expression of lines of attachment of pinna with mastoid process, entrance into external acoustic meatus.

Palpation: Paraauricular region is examined by pressing with big finger this region and jaw joint, tragus, postauricular region in the points of projection of antrum, sigmoid sinus, apex of mastoid process, lymphatic nodes around acoustic meatus and at the apex of mastoid process.

Otoscopy:
- Turn the head of patient with the corresponding ear towards yourself
- Direct the ray of reflector to the entrance of external acoustic meatus.
- Take auricle funnel of corresponding size with big and index finger
- Pull pinna back and upwards.
- With light circular movement introduce the funnel into membrano - cartilaginous part of acoustic meatus.
- Define recognising points of tympanic membrane, which as a whole compose otoscopic picture.

Examination of mobility of tympanic membrane with the help of pneumatic funnel of Zigloy:
- Join pneumatic funnel with balloon.
- Introduce funnel in auditory channel and obturate it.
- Observe through magnifying glass of funnel the tympanic membrane, pressing periodically balloon.
- Normally: the tympanic membrane will vibrate.

Examination of permeability of auditory tube. Method of Valisalvy:
- Take deep breath, firmly press lips.
- Hold the nose tightly and do strong exhalation
- Normally: patient feels light crackle and congestion of ears, which disappears after swallowing.

Method of Politser:
- Take otoscope, introduce olive into own ear, another - into ear of patient.
- Introduce into the nostrils of patient olive of balloon and press with another finger towards the olive.
- Request the patient to pronounce: “Pa- ra-hod” or “ku-ku”. On the last word quickly press the balloon.
- Normally: Doctor listens light blowing noise, patient - entrance of air into ear.

The scheme of acoustic passport

Right ear	Tests	Left ear
	Subjective noise **Whisper speech** **Colloquial speech** **Weber** **Rinne** **Schwabach** **Gele** **Bing** **Federiche**	

Test subjective noise in ears (S.N.). Value at three degrees: at the first degree (+)noise sensation reveals only in active interrogatory, at the second degree (++) patient complaints on the noise in ears, at the third degree (+++) sensation the noise in ear is the chief complaint of sick.
Test Whisper (W). Use collection of double numbers and words from table of V.I.Voyachek with predominance bass or diskants sounds. The results are written in meters. Runness of the hearing consider as a normal at perception double number (from 21 to 99) on distance no less 6 metros.

The distance can consider double, if investigator turn back to researching.

Thus, researcher must stay on distance – 6 meters from patient; the ear must direct into side of investigator and contrary closed by forefinger. For exception reading from lips the man doesn’t look in side of investigator. If the man doesn’t hear whisper on distance 6 meters the distance will be shorted, until the man will not repeat pronounced numbers.

Test Colloquial (C). It is investigated like previous test.

Tuning fork test consist in prolonged of perceiving in seconds of bass tuning fork S_{128} across the ear. Turning forks which are used for investigation have the passport of perceiving sound by normal ear. fork of high frequency you must close contrary ear of the patient.

4.At definition duration of perceiving tuning fork it is necessary take its from the ear periodically; low – on the distance 5-10 sm, high – 1 m, that avoid influences on the results of investigation.

5. During investigation bone conducting, the tuning fork which stay on the bone of the processus mastoideus don't touch to the pinna.

Answers to test for self-control knowledges.

1. 1)modiolus 2) bone cochlea 3)membranous cochlea 4) perilymph 5)endolymph 6) vestibule staircase 7) Reysner`s membrane 8) basic membrane 9) organ of Corty

2. a)acoustic b)vestibular

3. a)hair cells (external and internal) b)columna c)Deyters-cells cells d)Gensen-cells e)Claudis-cells f)basic membrane g)cover membrane

4. a)resonance theory of Gelmgolce
   b)hydrodinamic of Bekeshi, Fletcher
   c)ion theory of Lazarev
   d)mechanical-electrical of Davis
   e)cell-chemical of Vinnikov and Titova

5. yes; 6. Yes; 7. No; 8. Yes; 9. 1-a, 2-b; 10. A; 11.no; 12. Yes; 13. a)perilymph ; 14.no; 15. B; 16. 1-b, 2-a,b;. 17. basic membrane; 18.a)soundconducting; b) soundperceiving; 19. from internal acoustic artery; 20.b; 21.doublauricular hearing; 22.soundperceiving;

23.a)height; b)loud; c)timbre; 24.1-a, 2-b.

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Practical lesson 3

Topic: Clinical anatomy, physiology and methods of examination of vestibular apparatus.

Reason: Vestibular analyzer takes part in carrying out of one of the organism's functions of the vital importance- the function of equilibriums. It analyses the body's movements and static position in the space. The clinical anatomy and physiology of the vestibular analyzer knowledge will enable us to understand the mechanism of the vestibular disturbances origin (giddiness, nausea, retching disorder of equilibriums est.) arising due to the disturbances. The studying of the functional conditions of the vestibular analyzer is necessary for professional selection, particularly when one's fitness for sea or air service is to be assessed as well as for cosmic flights when weightlessness affects the organism.

Purpose of the lesson. After the topic studying a student must: **have** a clear understanding of the relationships between the vestibular analyzer and other systems of the organism. He must **know** the latest developments in the field of clinical anatomy and physiology of the vestibular analyzer. He must **be able** to reveal spontaneous vestibular disturbances, methods of carrying out of vestibular tests (rotator test, caloric test, pressed tests, Voyachec`s tests). Student has to recognize character, degree and reasons of dysfunction of vestibular analisator; appreciate results of investigation of vestibular analisator and make vestibular registration card, compose vestibular passport and draw a conclusion about the conditions of the vestibular function.

Basic concepts: ear diseases, impaired vestibular function are one of the most frequent human pathologies. Justification of the diagnosis and the choice of rational medical tactics for diseases of the outer, middle and inner ear are impossible without knowledge of clinical anatomy, physiology and methods of research of the organ of hearing.

Equipment: tables, dummies, simulators, multimedia presentations, video films, tool sets, tuning forks, tomograms, radiographs, etc.

Plan

№№	The name of the composition of the class	Hour
I.	Organizational moment (greetings, checking those present, announcing the topic, the purpose of the lesson, motivating students to study the topic).	7
II.	Control of supporting topics.	38
2.1	Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units).	8
2.2	Questions (test tasks, problems, clinical situations) to check basic knowledge on the subject of the lesson.	30
III.	Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.).	40
3.1	Content of tasks (tasks, clinical situations, etc.).	20
3.2	Recommendations (instructions) for performing tasks (professional algorithms, orienting maps for the formation of practical skills and abilities, etc.).	3
3.3	Requirements for work results, including to registration	2
3.4	Control materials for the final stage of the lesson: problems, tasks, tests, etc. (if necessary).	15
IV.	Summing up.	5

Basis knowledge is necessary for realization purposes of work.

Student has to know: structure of temporal bone: internal ear, bony and membranous labyrinth vestibule, semicircular canals; structure of reception apparatus of sacculus, semicircular canals; equivalent irritants of vestibular apparatus (angular and rectilinear acceleration, centrifugal acceleration and unit of measurement)

Task for self-examination on basic level of knowledge.

1 What belongs among the list to vestibular analisator?

a) semicircular canals

b) vestibulum

c) cochlea
2. How does bony labyrinth communicate with tympanic cavity?
a) auditory tube
b) vestibular and cochlear windows
c) internal auditory meats
3 What communicates among the list with subarachnoid space?
a) endolymphaticus space with the aid of endolymphaticus duct
b) perilymphaticus space by means of aqueducts vestibule
c) perilymphaticus space by means of aqueducts cochlea
4 How many openings are there between vestibule and three semicircular canals?
A)Six; B)five; C)four; D)three
5 How many ampoules does horizontal semicircular canal have?
a) One; b) two
6 Which ampoule juts out on surface of medial wall of aditus among semicircular canals?
a) Frontal; b)saggitalis; c)horizontal
7 What are equivalent irritants for reception apparatus of vestibule (utricles and sacculus)?
a) rectilinear acceleration and force of gravitation, centrifugal force
b) complex of forces of various purpose fullness during rotation of the body
c) only rectilinear acceleration
8 How can infection reach to labyrinth from tympanic cavity?
a) vestibular and cochlear window
b) auditory tube
c) internal auditory meats

Examples of answers to task № VII

1) a,b 4) b 7) a
2) b 5) a 8) a
3) c 6) c

Tentative chart for self-training students on subject

Task	Instruction for the task
Anatomy of vestibular analisator	1.Departments of internal ear belonging to vestibular analisator. 2. Anatomy of semicircular canals and structure of ampular receptor. 3. Anatomy of vestibule and structure of otolith apparatus. 4.Conducting tracts of vestibular analisator, nuclears; anatomical, functional connections with central nervous system.
Physiology of vestibular analisator	1.Equivalent irritants of ampular and otolith apparatus. 2. Mechanism of beginning irritation in sacculus of vestibule. 3. Mechanism of beginning irritation in semicircular canals. 4. Laws of nystagmus: - Evald's experiment and it's laws - steadfast Voyachek's laws. 5.Mechanism of beginning of spontaneous nystagmus and it's characteristic (five parameters of nystagmus)
Methods of examination of vestibular analisator	1 Typical subjective sensations by violation of vestibular apparatus function. 2. What spontaneous vestibular reactions do you register (call three groups of reflexes) 3. What tests do you carry out if patient has stato-kinetic violation? 4. Methodic of carrying out of rotator test. 5. Methodic of carrying out of caloric test. 6. Methodic of carrying out of pressed test. 7. Methodic of carrying out of otolithic Voyachek's reaction. 8. Investigation of sensation of otolith apparatus for

	cumulating irritation on four-bar swing. 8. Scheme of filling of vestibular registration.

Organization of self-training.

1. Acquaint yourself with purposes of self-training.

2. Please, observe succession (indicated in tentative chart for self-training) studying basic parts of the theme according to acquiring knowledge during work with handbook or lectures.

3. Extend and systematize knowledge from the textbook according to succession represented in methodics elaboration (unit of information, graphological structure of the theme).

4. Carry out test of your self-training with aid of offered tasks and tests. After self-examination, please, look examples of answers at the end of methodic recommendation.

5. Give answers on offered questions. It will be your homework.

6. Make task on educational-investigation work of student

Task for self-examination for students to the lesson.

Please, do such typical exercises and compare your answers with right answers. It is at the end of methodical recommendation.

Exercise 1. Sick complains on dizzy, deviation to the right during walking. Middle-swinging and horizontal-rotator nystagmus is determined only when the sick is looking on left. Give degree of nystagmus.

Exercise 2. Sick complains on periodic dizziness, discharge of pus from the right ear. When the doctor presses tragus of the right ear, nystagmus occurs to the same side. How is this test called and what does it demonstrate us?

Exercise 3. Sick with chronic suppurative epitympanitis complains on dizzy, deviation to the left during gait. Direction of fall changes during changing of head position. Small-swinging horizontal nystagmus is determined, when the sick is looking to the right. What is your diagnosis?

Exercise 4. Investigation of otolithic reactions was performed on candidate for pilot. Pallor, nausea, cold perspiration appeared on the patient. What degree of vegetative reaction was there? May this patient be a pilot?

Answer on following tests.

1. What is equivalent irritant for receptors of semicircular canals?

a) angular acceleration
b) rectilinear acceleration
c) gravitate acceleration

2. What is equivalent irritant for otolith apparatus?

a) angular acceleration
b) rectilinear acceleration
c) gravitate acceleration
d) changing of head and body position in space
e) centrifugal acceleration

3. Please tell type of nystagmus when the man is rotating in Barani's chair or when we pours water in the ear.

a) congenital
b) adaptive
c) optokinetic
d) spontaneous
e) experimental

4. Tell about conducting tracts, nuclears of vestibular analisator and their functional connections with central nervous system. Tell about nuclears and five main anatomical and functional connections of vestibular analisator.

5. Tell about otolithic test and it's appreciation according to Voyachek.

6.Tell about mechanism of beginning of spontaneous nystagmus and it's characteristic. Say five parameters of nystagmus.

7. Low-governed nature of nystagmus reaction. Formulate three laws of Evald and two laws of Voyachek.
8. Of what components do vestibular nystagmus consist of?
   a)
   b)
9. What groups of reflexes are there during irritation of vestibular apparatus?
   a)
   b)
   c)
10. Say tests more using in clinic for investigation of vestibular apparatus?
11. Show the direction of nystagmus during caloric test.
a) during infusion cold water in the ear
b) during infusion warm water in the ear

Estimated questions for given theme.
1. On what anatomical parts does auricle labyrinth divide?
2. What functions do different parts of auricle labyrinth have?
3. Tell about structure of bony semicircular canals and vestibule.
4. Tell about structure of membranous and peripheral analisator in semicircular canals and vestibule.
5. Tell about vestibular nuclears and it's connections.
6. Say equivalent irritants of ampular and otolithic apparatus.
7. Tell about vestibular symptomocomplex.
8. Tell about mechanism of vestibular nystagmus and it's characteristic.
9. Say Evald's laws.
10. What tests do you know for investigation of vestibular apparatus?

Educational- research work of student.
1.Form differential diagnosis of central and peripheral vestibular syndrome.
2. Form typical and untypical situational exercises.
3. Form list of instruments for carrying out tests of vestibular analisator.

Organization of original work for students.
1. Equip work place.
2. Divide into small groups (2-3).
3. Carry out investigation of vestibular analisator.
4. Fill up vestibular card and give it to the teacher for examination.

Acquaint with purposes of original work on the lesson.

NAME OF ORIGINAL WORK OF STUDENT	SUBJECT OF ORIGINAL WORK OF STUDENT	**PURPOSE**
1. Investigation functions of semicircular canals	Discovery of spontaneous vestibular violation. Carrying out of load vestibular tests. Registration of information in vestibular card.	Be able to carry out functional methods investigation of ampular receptor
2. Investigation functions of otolith apparatus	Carrying out otolith test on each other and appreciation of results on degrees	Be able to carry out investigation of otolith apparatus, analyze and synthesize information
3. Filling up of		Be able to appreciate

vestibular card		information and use it in clinic for differential diagnosis of vestibular dysfunction

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Practical lesson 4

Topic: Clinical anatomy, physiology and methods of examination of the nose, paranasal sinuses

Reason: In practical work physicians often meet the pathology of the nose, paranasal sinuses and complications. External nose is the main part of the cosmetic ensemble of the face and so the changes of its shape often lead to the patient's moral sufferings. The diseases of the nose and paranasal sinuses - rhinites, nasal bleedings, sinuites, rinogenous orbital and intracranial complications are often met by the doctors of different specialties (otorhinolaryngologists, therapeutists, surgeons, neuropathologists, oculists, neurosurgeons, stomatologists). Knowledge of the structure and functional peculiarities of the nose, paranasal sinuses will help the physician to choose better methods of treating the patient when these organs are damaged. He must also know about the last achievements of science (computer X-ray tomography, magneto-resonance tomography and so on), their indications, the methods of use, essence and priority, as they are widely used in the leading Ukrainian clinics.

Purpose. After the topic studying a student must have a clear understanding of topological relationships of the nose, paranasal sinuses and other adjacent organs, diaphanoscopy, x-ray examination of the nose and nasofrontal recesses.

A student must **know**:

- clinical anatomy, physiology of nose and paranasal sinuses;
- topographo-anatomical features of facial skeleton, its formations, embryogenesis;
- have an idea about the contemporary methods of investigation of paranasal sinuses.

Be able:

- to carry out traditional endoscopic observation (front and back rhinoscopy);
- the estimate the data of traditional roentgenological observation (survey roentgenography, contrast tomography, the types of placement for the investigation of paranasal sinuses).
- to determine the indications, contraindications for the computer X-ray tomography, magneto-resonance tomography, thermography, ultrasonic investigation, SHF-radiometry.

Classroom equipment

1. Tools for performing endoscopic examination of ENT organs: nasal mirrors, spatulas, rear rhinoscopy mirror, laryngeal mirrors, ear funnels.
2. Schemes, tables, slides, models.
3. Tests to determine the initial level of knowledge.
4. Situational tasks for final control of students' level of knowledge.

Plan

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3.3	Requirements for work results, including to registration	2
3.4	Control materials for the final stage of the lesson: problems, tasks, tests, etc. (if necessary).	15
IV.	Summing up.	5

The tasks for practical lessons:

Questions	Tasks
1) The bony and cartilaginous base of the external nose	Name the bones and cartilages forming the external nose.
2) The walls of the nasal cavity and their framework	Draw a diagram of the lateral nasal wall of the nose cavity point out the junction of the nasofrontal recesses with the nose cavity.
3) The peculiarities of the mucous membrane of the nose cavity	Point out the border between the breathing and olfactory areas of the lateral nasal wall on the diagram.
4) The clinical anatomy of the nasofrontal recesses	Enumerate them, draw their projection on the face.
5) The bloodstream of the nose cavity, the outflow of black blood and lymph peculiarity	Name the location of the bleeding zone of the nose cavity.
6) The physiology of the nose	Name the main functions of the nose.
7) The methods of examinations of the nose	Name the instruments of the frontal rhinosco-py. Draw the normal rhinoscopical picture in the notebook
8) The methods of the paranasal sinuses examination	Enumerate the main methods.

Methods of instruments usage of the nose

Position of a patient and an examiner. The patient is seated in a chair, and the source of light is placed above and behind the patient's left shoulder. The examiner sits in front of the patient, or at his left side. Should the examiner be left-handed and prefer to use the mirror over the left eye, then the light and the examiner must be on the patient's right. A rotating chair is a valuable aid when examining elderly patients, as they find it difficult to turn in a fixed chair for the examination of both ears.
Focusing the light. The examiner brings his head mirror down over his right eye and should be looking directly through the hole in the mirror with the right eye and around its edge with his left eye. The light will generally be reflected on to a fairly small area of the patient's face, and by varying the position of the patient slightly (usually by bringing him a little forward) the beam will be brought to a sharp focus on the part to be examined. This gives bright illumination, and by slight adjustment of the head mirror will bring the light exactly to the part required.

It will be appreciated that in examining a nose which has a depth of possibly 7.5 cm or more, it is necessary for the examiner to move either his head or the patient's head as the examination proceeds from the outer part of the nose to the inner part, in order that the light may be kept correctly focused. It is the failure to appreciate the fact that the light must be moved so that it may be thrown on to the each part in succession which causes a great deal of difficulty in the examination of these cavities.

A patient, an examiner, a bull's eye lamp and a head mirror having been positioned as described earlier, the external appearance of the nose is first noted, after which the nasal speculum is taken up. All this requires considerable practice at first. Method of the nasal speculum using. Middle and ring fingers control the spring and the speculum is introduced obliquely in the plane of the nostril, then lifted into the position shown. Note that the direction of view initially is along the floor of the nose. Many patients automatically throw the head back when they know the nose is about to be examined. Only later as toe examination continues should the head be tilted in order to examine the upper parts of the nasal cavity. Then turn the attention to the turbinates.

Examine the ***inferior turbinates*** first; determine their size, their color and the character of the membrane covering them - whether it is smooth or rough; if it is not smooth, where the roughness occurs - its distribution, its extent and character.

Next try to examine the ***middle turbinate.*** If it cannot be seen, find out the reason. The septum may be deviated; the inferior turbinate may be edematous. There may be polyps; the light may be badly focused.

The turbinates are sometimes confused with polyps, but unlike the latter they are pink, firm, sensitive to gentle probing and immobile. Then look for the uncinate process laterally in front of the middle turbinate. The superior turbinate cannot be seen on anterior inspection. The normal mucous membrane should be smooth, pink, slightly moist and glistening.

Posterior rhinoscopy is probably the most difficult examination procedure. The examiner has to cope with the difficulty of fixing his spot of light upon a very small mirror and then projecting the light with the mirror upon various structures in the nasopharynx. All these must be carried out without irritating or upsetting the patient and causing gagging or closure of the nasopharynx by the action of the soft palate.

A tongue depressor and a small post-nasal mirror are the instruments required. The mirror is first heated gently to prevent fogging and tested on the hand to avoid burning of the patient.

The tongue is depressed and the mirror is then slipped in behind the uvula, the handle of the mirror being usually passed from the left corner of the mouth. The mirror is then rotated gently and the light is made to traverse the nasopharynx. The mouths of the Eastachian Tubes are examined. The upper posterior wall of the nasopharynx is examined for the presence of adenoids. The posterior end of the septum shows as a white pillar and is the chief landmark in orientating the examiner.

The light is then thrown into the choanae and the posterior ends of the turbinates can be examined. The overgrowth of the epithelium, if present, may be noted, and the presence of pus or other secretion in relation to the turbinates is observed. If pus is seen the position must be carefully noted; for instance, whether it is above or below the middle turbinate. The amount of obstruction caused can be judged and the source of the purulent material ascertained by its relation to the various structures.

From the description this examination sounds comparatively simple, but many difficulties may be encountered.

Anatomical features of nasal cavity and paranasal sinuses difficult the diagnostics with the help of only traditional methods of investigation (observation, palpation, investigation of respiratory and taste functions; front and back rhinoscopy, diaphanoscopy).

According to the contemporary achievements of science and technics, basic methods of investigation are: endoscopic, roentgenological ones, computer X-ray tomography, magneto-resonance tomography, radio nuclide scintigraphy and such additional methods as ultrasonar biolocation, distance infra-red thermography, SHF-radiometry.

General methods of treatment of nasal diseases:

- The painting of the nasal mucous with vasoconstrictor drugs or lidocaine for anesthesia or with a medical solution for therapeutic purposes is made with a cotton applicator under the guidance of vision.
- The insufflation into the nose of various powder drugs as part of conservative treatment or following an operation is carried out with various types of insufflators.
- The cauterisation of the nasal mucous with silver nitrate, trichloracetic and chromic acid is performed for therapeutic purposes, as well as for the arrest of hemorrhage. Prior to cauterisation, the nasal mucous should be painted once or twice with 10% lidocaine solution.
-

THE QUESTIONS FOR THE SELF-CONTROL

1. Enumerate paranasal sinuses
   a); b); c) ; d)
2. Name sinuses, opening to the upper nasal duct
   a) maxillar
   b) frontal
   c) ethmoidal (back cells)
   d) ethmoidal (middle and front cells)
   e) sphenoidal
3. Name sinuses, opening to the middle nasal duct
   a) frontal
   b) maxillar
   c) ethmoidal (front and middle cells)
   d) ethmoidal (back cells)
   e) sphenoidal
4. What is opened to the lower nasal duct?
   a) paranasal sinuses
   b) nasolacrimal canal
5. Enumerate the walls of nasal cavity
   a, b, c, d.

THE TASKS FOR THE SELF-CONTROL

Task 1. A patient complains of difficult nasal breathing on the right, the absence of any secretion, numbness of right cheek, a little sticking out of eye-ball. It is known, that he had a facial trauma a year before.

Objective observation: exophthalmus of the 1-st degree without any difficultness in moving of eye. Dense elastic formation is palpated in the medial parts of the right eye-socket. It is painless with the clear borders. Surfacial skin sensitivity is lowered in the projection of right facial wall of maxillary sinus. The mucous membrane of the right part of nasal cavity is edematic, stagnant. There is no pathological secretion here. Secretion also isn't revealed by the puncture of right maxillary sinus. The volume of sinus is decreased. Homogenous shading is revealed in the projection of right ethmoidal labyrinth by survey roentgenogram of PNS, medial wall of eye-socket is destroyed.

What methods of investigation let to exact the diagnose?

What is the character of injury of ethmoidal labyrinth?

Task 2. District otorhinolaryngologist suspected the presence of tumor in a pregnant woman of 29 (16 weeks pregnancy) against a background of exacerbation of right chronical purulent-polypous maxillitis. Blood was got by the puncture. The volume of sinus is decreased.

What methods can specify the diagnose?

STANDARD ANSWERS for THE QUESTIONS FOR THE SELF-CONTROL

1. a) maxillar
   b) ethmoidal
   c) frontal
   d) sphenoidal
2. c)
3. a), b), d)
4. lateral, medial, upper, lower

STANDARD ANSWERS for THE TASKS FOR THE SELF-CONTROL

Task 1.

1. ACTG (standard placement)
2. ACTG with the contrast investigation to differentiate mucocele and tumor
3. NMR - by the presence of increasing effect, typical for tumor, for the specifies of injury's placement, radio-nuclide scintigraphy.

Task 2

a) ultrasonar investigation;

b) thermography;
d) NMR

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Practical lesson 5

Topic: Clinical anatomy, physiology and methods of examination of pharynx, larynx, esophagus, trachea, bronchus.

Purpose: to acquaint students with the importance of the pharynx, larynx, trachea, esophagus in human life, the anatomy of these organs, and their relationship with the surrounding anatomical structures. In order to understand the mechanism of the development of diseases, their clinic, to be able to diagnose, the doctor must have fundamental knowledge of anatomy, physiology, methods of traditional examination of the pharynx, larynx, trachea, esophagus, such as: posterior rhinoscopy, finger examination of the nasopharynx, pharyngoscopy, direct and indirect hypopharyngoscopy, computer and magnetic resonance imaging, fibropharyngoscopy, computer X-ray tomography, magnetic resonance imaging and many others. The student should know the anatomical and histological structure of the Pirogov-Waldeyer lymphadenoid ring and its significance in matters of immunity.

General aims:

formation of the image of a highly professional doctor who is well-versed in the anatomy, physiology and pathology of the upper respiratory tract, education of the professional responsibility of the doctor, the ability to confidently evaluate the results of research methods of all parts of the pharynx, all parts of the nose and paranasal sinuses, the significance of these results for legal, psychological and professional rehabilitation of the patient.

The student should know:

5. topography and anatomy of the pharynx, larynx, trachea, esophagus, their physiology;
6. basic methods of X-ray diagnosis of diseases of the pharynx, larynx, trachea, esophagus;
7. age-related anatomical and physiological features of the pharynx, larynx, trachea, esophagus;

Based on theoretical knowledge of the topic:

4. master the methods of researching the pharynx, larynx, trachea, esophagus:
- pharyngoscopy,
- fibropharyngoscopy,
- direct and indirect hypopharyngoscopy,
- direct and indirect laryngoscopy,
- esophagoscopy.

5. ***be able to evaluate*** the results:
- computer tomography;
- magnetic resonance imaging.

6. perform typical manipulations:
- applied anesthesia,
- drug-free blockade of the lower nasal conchas, etc.

Basic concepts: In practical work, doctors of various specialties (otolaryngologists, therapists, pediatricians, neuropathologists, neurosurgeons, ophthalmologists, dentists) often encounter diseases of the pharynx, larynx, esophagus. The pharynx is part of the upper respiratory tract and digestive system. It includes 6 tonsils of the subepithelial lymphadenoid tissue of the Pirogov-Waldeyer ring, which plays a major role in the body's immunological reactions. The disease of these tonsils often leads to significant complications on the part of many organs and systems. Infection from the pharyngeal cavity can enter the parapharyngeal or retropharyngeal space, knowledge of the clinical anatomy of which is very important. Often, the pharynx, nose and paranasal sinuses are the site of benign and malignant tumors. The cause of the pathological condition of the pharynx can be diseases of the digestive tract, liver, pancreas. Thus, knowledge of this topic should be used by students when studying the pathology of the upper respiratory tract, diseases of the lymphadenoid system of the pharynx, and in the future in the practical work of an otorhinolaryngologist, infectious disease specialist, gastroenterologist, surgeon, neuropathologist.

Equipment: tables, dummies, simulators, multimedia presentations, video films, tool sets, tuning forks, tomograms, radiographs, etc.

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Plan

№№	The name of the composition of the class	Hour
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2.2	Questions (test tasks, problems, clinical situations) to check basic knowledge on the subject of the lesson.	30
III.	Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.).	40
3.1	Content of tasks (tasks, clinical situations, etc.).	20
3.2	Recommendations (instructions) for performing tasks (professional algorithms, orienting maps for the formation of practical skills and abilities, etc.).	3
3.3	Requirements for work results, including to registration	2
3.4	Control materials for the final stage of the lesson: problems, tasks, tests, etc. (if necessary).	15
IV.	Summing up.	5

ORIENTATION CHART.

Task	*Directions for the task*
Clinical anatomy and physiology of the pharynx.	1. Topography of the pharynx. 2. Three parts of the pharynx, the boundaries between them. 3. Structure of the pharyngeal walls. 4. Pharyngeal cellulose space (Retropharyngeal, peritonsillar, perilaryngeal). 5. Blood supply, lymphatic drainage and enervation. 6. Structure of the palatine tonsils. 7. Basic functions of the pharynx. 8. Which tonsils form Waldeyer's ring?
Methods of examination of the pharynx.	1. Methods used for examination of the nasopharynx: posterior rhinoscopy, finger examination, X-rays CAT scans; middle parts of the pharynx: mesopharyngoscopy; lower part of the pharynx: indirect laryngoscopy, direct laryngoscopy, X-rays and tomography. Which anatomic structures can be seen with the help of posterior rhinoscopy, with hypopharyngoscopy?
Clinical anatomy and physiology of the larynx.	1.Clinical topography of the larynx. 2.The laryngeal skeleton (laryngeal cartilages). 3.The main laryngeal ligaments. 4.External and internal laryngeal muscles. 5.What forms the true- and pseudovocal folds? 6.Regions of the pharynx, their anatomical parts. 7.Anatomic-physiological peculiarities of the child pharynx. Pharynx blood supply, innervation and reflexogenic regions.
Methods examination of the larynx.	1. External examination, palpation of the neck, indirect and direct laryngoscopy, X-ray and CAT scans of the indirect laryngoscopy of the larynx. 2. Describe the anatomic structures, seen while conducting.

Carry out of your acquired skills with the help of the following tests:

1. The pharynx is divided into which parts?

A) B) C)

2. Waldeyer's ring consists of which tonsils? A) B) C) D)
3. The pharynx is communicates through how many openings?
A) B) C) D)
4. Name the boundaries between the following parts of the pharynx
A) between the upper and middle ; B) between the middle and lower
5. The retropharyngeal space is bounded by which vertebrae?
6. Does pharyngolarynx communicate with the esophagus?
7. Blood supply of the palatine tonsils is carried out by the ascending palatine artery?
8. Does the n. vagus innervate of the palatine tonsils?
9. Which muscle forms the posterior palatine?
A) palatopharyngeal; B)stylopharyngeal; C) upper pharyngeal constrictor
10. What age is the nasopharyngeal tonsil located in a hypertrophy state?
11. Show what lymph tissue forms the at the posterior wall of the pharynx?
12. What name of the cracks which deeply cut through the palatine tonsils?
13. What bones form the upper wall of the pharynx?
14. What is between the tonsillar capsules and the wall of the pharynx?
15. What lymph nodes are responsible for lymphdrainage of the palatine tonsils? A) B) C)
16. Write down which openings are there in the pharynx? A) B) C) D)
17. What anatomical formations are bounded by the lateral pharyngeal wall?
18. What layers there are in the pharynx? A) B) C) D)
19. In what formation pear shaped recesses continues?
20. Which pharynx correspond to the level of larynx in an adult?
A) C_3-C_6; B) C_4-C_6; C) C_3-C_5

Orientation basis for carrying out pharyngeal investigation.

First stage – external examination and palpation.

1. Check the neck region, mucous membrane of the lips.
2. Palpate the regional lymphatic nodes of the pharynx: submaxillary, in the retromandibular fosse, deep cervical, posterior cervical and in the supra and subclavicular fosse.

Second stage – oroscopy.

1. Take in the left hand in such a spatula so that the thumb holds it from underneath and the index and middle fingers from the upper side. Place the right hand on the head of the patient.
2. Ask the patient to open his mouth and with the help of the spatula pull back first the left and then the right angles of the mouth and examine the vestibule: the mucous membrane, secretion ducts of the parotid glands, which are located on the inner surface of the check at the level of the second upper premolar.
3. Examine the oral cavity: teeth, gums, hard palate, tongue, the orifices of the secreting ducts of sublingual and submandibular glands, the oral floor. The oral floor can be examined by asking the patient to lift the end of the tongue or lift it with the spatula.

Third stage – mesopharyngoscopy.

1. Holding the spatula in the left hand, press down the anterior $2/3^{rd}$ of the tongue. The speculum is introduced through the right angle of the mouth, the tongue is pressed down not by the plain surface of the spatula but by its end. On touching the root of tongue immediately the vomiting reflex arises. Check the mobility and symmetry of the soft palate by asking the patient to say "a". Normally the soft palate is quite mobile.
2. Examine the mucous membrane of the soft palate, the uvula, the anterior and posterior palatine arches. Normally the mucous layer is smooth, rosy and the arches contoured. Determine the size of palatine tonsils; from achieving this mentally divide the distance between the anterior palatine arch and the vertical line crossing through the center of the uvula and the soft palate. Size of the tonsils rising to $1/3^{rd}$ of this distance, are put in the first level, those rising to $2/3^{rd}$ – to the second level; and those rising to the level of the central pharyngeal line – to the third level of hypertrophy.

3. Examine the mucous layer of the tonsils. Normally it is rosy, damp, with a smooth surface.

4. Determine the lacunar contents. For this take a second spatula in the right hand. With one spatula press down the tongue and with the other one, softly press the tonsil in its upper third region. While examing the right tonsil the tongue should be pressed with the help of the spatula in the right hand and on the other hand while examining the left tonsil – with the spatula in the left hand. Normally the lacunas contain an epithelial corks or they may be absent.

5. Examine the mucous layer of the posterior wall of the pharynx. Normally it is rosy, damp, plain, and has rare up to the size of 1 mm lymphoid granules on its surface.

Fourth stage – epipharyngoscopy – posterior rhinoscopy.

1. Take the nasopharyngeal mirror, fixing it in your hand, warm it and then clean it with a tissue.

2. The speculum being held in the left hand should be used to press down the anterior 2/3rd of the tongue. Ask the patient to breathe through the nose.

3. Holding the nasopharyngeal mirror in the right hand, like a pen, introduce it into the oral cavity. The mirror surface should be facing upwards, after which direct the mirror behind the soft palate, taking care not to touch the tongue root and the posterior pharyngeal wall. Slowly rotating the mirror examine the nasopharynx.

4. While conducting posterior rhinoscopy one should examine: the nasopharingeal roof, choanae, the posterior ends of the nasal conches, the pharyngeal opening of the Eustachian tube. Normally the nasopharyngeal roof is free in adults, the mucous rosy, free choanae. On the lateral walls of the nasopharynx at the level of the posterior ends of the inferior nasal conch are located not very large depressions – the pharyngeal opening of the Eustachian tubes.

Fifth stage – finger nasopharyngeal examination.

1. With the patient in a sitting position, the doctor stands behind him on his right hand side. With the index finger of his right hand the doctor lightly presses the left check of the patient between his teeth, while the latter is holding open his mouth. With the index finger of the right hand the doctor rapidly passes beyond the patient's soft palate into the nasopharynx and feels the choanae, the nasopharyngeal roof, and the lateral walls. During this procedure the pharyngeal (nasopharyngeal) tonsils are felt by the end of the index finger.

Hypopharyngoscopy see like indirect laryngoscopy.

First stage – external examination and palpation.

1. Check the neck and the configuration of the larynx.

2. Palpate the larynx and its cartillages: cricoid, thyroid. Normally the larynx while palpation is painless. Passive lateral movement.

3. Palpate the regional lymph nodes of the larynx: submandibular, deep cervical, posterior cervical, prelaryngeal, pretracheal, paratracheal; in the supra- and subscapular fosse. Normally the lymph nodes are not felt.

Second stage – indirect laryngoscopy.

1. Take the laryngeal mirror, fix it in your hand, warm it in hot water 2-3 seconds to 40-45^{o}C, wipe it with a tissue. By touching the heated mirror to the hand can determine the level of heating.

2. Ask the patient to open his mouth, show his tongue and to breathe through the mouth.

3. The tongue end should be covered superiority and inferiority with a cotton tissue and should be held by the fingers of the left hand in such a manner, so that the thumb is located on the upper surface, the middle finger on the lower surface and the index finger should be holding up the upper lip. Lightly pull the tongue towards yourself and slightly down wards.

4. Holding the laryngeal mirror in the right hand in the manner of a pen, introduce it into the oral cavity with the mirrored surface parallel to the plane of the tongue, taking care not to touch the root of the tongue or the posterior pharyngeal wall. On reaching the soft palate lift with the help of the surface of the mirror the uvula and place the mirror at an angle of 45^{o} to the medial laryngeal axis, on necessity it is possible to lightly lift the soft palate, and direct the light rays from the reflector on to the mirror. Ask the patient to pronounce "e" and following which he should be asked to take in a breath. In

such a manner one can see the larynx in two phases of physiological activity: phonation and inspiration. The position of the mirror can be corrected until an image of the larynx is not formed in it.

5. Remove the mirror from the larynx and put it in disinfecting solution.
6. The picture during indirect laryngoscopy:

The laryngeal mirror forms image which differs from the true image in that the anterior parts of the larynx in the mirror are located superiority (it looks as if they are posteriori located), the posterior – inferiority (it looks as if they are anteriority located). The reflections of the right and the left sides of the larynx correspond to their real positions (they do not change).

1. The first thing seen in the laryngeal mirror is the tongue root with the superiority located lingual tonsil; after that is seen the epiglottis in the form of an opened leaf. The epiglottic mucous layer is normally pale rosy or lightly yellowish in color. Between the epiglottis and the tongue root are seen two not large depressions – vallekule, boundaried by the middle and the lateral glossoepiglottic folds.
2. During phonation the vocal folds are seen, normally they are – greyish in color. The anterior ends of the folds at the points where they leave the thyroid cartilage form the anterior commisure.
3. Above the vocal folds are seen the vestibular folds having a rosy color. Between the vocal and the vestibular folds, on each side are depressions – the laryngeal ventricles.
4. On the lower side the mirror shows the posterior parts of the pharynx: the arytenoid cartilages, having rosy color with a smooth surface, presenting two tubercles, the posterior ends of the vocal folds are fixed to the vocal extensions of these cartilages; between the bodies of the cartilages is located the intraarytenoid space.
5. From the arytenoid cartilages superiority to the outer ends of the epiglottic stem radiate the aryepiglottic folds, having a rosy color with a smooth surface. On the lateral side of the aryepiglottic folds are located the pear shaped sinuses (the lower part of the larynx), whose mucous layer is also rosy and smooth.
6. On inspiration and phonation the mobility of both the laryngeal halves is determined.
7. On inspiration between the vocal folds is formed a space known as the vocal space, through which the lower part of the larynx – the subvocal region is seen; quite often the upper rings of the anterior tracheal wall can be seen covered by rosy mucous layer.
8. On examining the larynx it is needed to rate the condition of its different constituent parts.

Answers to the self-controlled preparation for the lesson.

A upper (vestibular); B middle (plica); C lower (subplical); 2. A palatine; B nasopharyngeal; C tubarious; D lingual; 3.A by double choanal orifices with the nasal cavity; B by two Eustachian tubes with the middle ear cavity; C.communicates through the pharyngeal opening with the oral cavity; D with the esophagus; E with the larynx; 4.A in the plane of the hard plate; B hypothetical plane drawn through the upper edge of the epiglottis; 5.True; 6.True; 7.True; 8.True; 9.A; 10.1-3 years; 11.lymphoid granules; 12.lacunas; 13.A the main bone; B part of the occipital bone;14.Paratonsillar cellulose space – Porou's cellulose tissue; 15.A submandibular; B retromandibular fossae lymph nodes; C deep cervical along the jugular vein; 16.A choanae; B. fauces ;C laryngeal entrance; D.oesophageal entrance; 17.Nerv-vascular cervical bundle; 18.A mucous;B fibrous; C muscular; D fascial; 19. Into the esophagus; 20.B.

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7. www.bundesaerztekammer.de – German Medical Association

Practical lesson 6

Topic: Acute purulent middle otitis. Mastoiditis

Actuality of topic: Acute purulent middle otitis is called inflammatory infectious disease of mucous layer of air containing cavities of middle ear.

Suffered acute otitis may be the reason of stable hardhearing, of development of chronic inflammation of middle ear, threatening intracranial complications. Probability of the latter is related with no diagnosis at right time, as well as with mistakes in treatment tactics of acute purulent middle otitis.

Above mentioned facts form the base of importance of aim of study, placed before students. These knowledge of the topic may be used during study of infectious, paediatric, nervous diseases and in practice of doctor of general profile.

Aim of class: student should know:

- aetiopathogenesis of acute middle otitis;
- clinics, diagnosis, principles of treatment of patient with given pathology;
- subjective and objective symptoms of inflammation of mastoid process, types of inflammation of mastoid process, types of mastoiditis, principles of treatment.

Student should be able:

- to examine patient with acute middle otitis;
- recognise presence of disease of middle ear in patient, give substantiated conclusion and define further general doctors tactics;
- prescribe proper medical measures, used in different stages of acute middle otitis;
- should be able to evaluate and interpretate the data of X-ray's of mastoid process as per Shuller;
- conduct differential diagnosis of diseases of external and middle ear;
- possess practical skill "clearing of external acoustic meatus".

For realisation of aims is necessary basic knowledge from course of normal anatomy, of previous topics of disciplines on: structure of temporal bone: tympanic cavity, Eustachian tube, mastoid process; methods of examination of organ of hearing (otoscopy, examination of hearing by tuning fork, by speech).

Equipment: tables, dummies, simulators, multimedia presentations, video films, tool sets, tuning forks, tomograms, radiographs, etc.

Plan

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IV.	Summing up.	5

Reference chart of self preparation on the topic.

Assignment	**Indication towards assignment**	

1. Acute purulent middle otitis, aetiology, pathogenesis, clinics diagnosis, treatment.	1) What do you understand under acute inflammation of middle ear ? 2) Aetiology, pathogenesis of acute purulent middle otitis, predispose factors of disease. 3) Ways of entering of infection into middle ear. 4) Pathomorphological changes in middle ear during acute otitis. 5) Name clinical stages of acute purulent middle otitis. 6) Describe clinical features and methods of conservative treatment of first stage of acute otitis - mechanism of action of carbol-glycerol drops - indications towards parascenthesis and technique of its performance. 7) Enumerate clinical symptom of II stage of acute otitis and methods of conservative therapy - prescription of medical preparations, which you will use in 2-nd stage. 8) Clinical symptoms and methods of treatment of III stage of acute purulent middle otitis. 9) Results of disease.	
2. Peculiarities of course of acute purulent otitis in child age.	1) Enumerate anatomical peculiarities of structure of temporal bone, determining frequency of development and clinical display of breast age. 2) What in behaviour of child of breast feeding allows doctor to suspect inflammation of middle ear. 3) Describe otoscopic data during acute otitis in children of breast age	
3. Peculiarities of acute purulent otitis during infectious diseases.	1) Characterise otoscopic picture during influenza otitis. 2) Peculiarities of course of acute purulent middle otitis during diphtheria, scarlet fever, tuberculosis.	
4. Differenti-al diagno-sis of diseases of external and middle otitis.	1) Conduct differential diagnosis of external otitis and acute purulent middle otitis on basis of following symptoms: - pain in ear , - decrease of hearing, - noise in ears, - character of exudate in auditory passage, - condition of skin of auditory canal, - palpation of auditory passage and tragus, - change in tympanic membrane.	
5. Mastoiditis reasons, clinics, diagnosis, treatment. Forms of mastoiditis	1) Reasons of development of mastoiditis. 2) Definition and clinical symptoms of mastoiditis. 3) Types of mastoiditis. 4) Atypism of clinical course of mastoiditis in of early child age, of elderly age. 5) Name differentiate symptoms of mastoiditis from furuncle of external acoustic meatus.	

Acute Catarrh of the Eustachian Tube. Inflammations of the nasal and nasopharyngeal mucosa, as in acute coryza, influenza and other diseases, are very likely to extend to the mucous membrane of the Eustachian tube which, together with the middle ear cavity, forms a kind of nasopharyngeal diverticulum.

An inflammatory swelling of the tubal walls causes obstruction of air passage to the tympanic cavity in swallowing. Tubal obstruction also occurs in edematous hypertrophies of the posterior ends of the inferior conchae, nasopharyngeal tumours; tubal obstruction is particularly frequent in children with adenoid hyperplasias, as well as in a number of other diseases.

The *symptoms* of obstruction of the Eustachian tube detected by otoscopy may result from changes in the tympanic cavity. Cessation of air supply or inadequate ventilation will result in the

tympanic cavity air being partially absorbed by the mucosa at the expense of oxygen, which is followed by an air pressure loss in the middle ear. The disturbance of pressure balance on both sides of the drum will cause the latter's retraction.

The subjective symptoms are loss of hearing acuity, a feeling of fullness in the ear and a crackling sound heard when swallowing; the patient may sometimes imagine he hears the echo of his own voice; this is known as autophony. Where there is transudate in the middle ear, the patient will complain of a sensation of fluid in the ear. Body temperature is usually normal, ear pain is slight or completely absent.

Otoscopical examination of drum retraction reveals that the handle of the malleus takes a more horizontal position and looks shorter in perspective, the short process sticks out sharply, the anterior and posterior folds leading from it have a distinct outline. The light cone changes in form and becomes shorter to appear as a dot or disappear altogether. An acute obstruction of the Eustachian tube is often followed by hyperemia of the mucous membrane ex vacuo and appearance in the tympanic cavity of transudate whose level may sometimes be observed in otoscopy.

Treatment. This consists in the removal of the basic cause of tubal obstruction. Tumours, hypertrophies and adenoid hyperplasias in the nasopharynx are removed by surgery. Acute inflammations of the nasal and nasopharyngeal mucosa are treated with various vasoconstrictive and antiinflammatory remedies.

Cocaine-ephedrine drops are prescribed for instillation into the nose. Simultaneously local heat treatment is given through the application of hot compresses to the ear and its irradiation with a "sollux" lamp. This treatment restores nasal respiration, serves to reduce swelling in the tubal mucosa; hence the transudation in the middle ear resolves. Restoration of the tubal function and normal pressure in the tympanic cavity is helped by inflations which are best used as soon as the acute inflammation in the nose has subsided.

Acute inflammation of the middle ear

Acute inflammation of the middle ear is quite common. Acute otitis media involves not only the tympanic cavity but also the other parts of the middle ear, such as the auditory tube, the antrum, and the cells of the mastoid process.

The direct cause of acute otitis media is infection of the middle ear with streptococci, staphylococci, pneumococci, and less frequently other microbes; mixed flora is sometimes responsible for the onset of the disease. Acute otitis is often secondary. It can be a complication or a manifestation of a systemic infection, for example, infection of the upper airways and influenza; scarlet fever, measles, diphtheria and some other diseases provoke acute otitis media in children. It can be due to acute and chronic inflammation of the pharynx and the nose. The main pathological factor is mechanical compression of the pharyngeal orifice of the auditory tube and impairment of its ventilating and draining functions. Among such diseases are hypertrophies rhinitis, adenoids, choanal polyp, hypertrophies pharyngitis, polyps of the nose, tumors of the pharynx. Less frequently otitis is secondary to injuries to the ear.

In addition to the mentioned pathological factors, the leading role in the etiology of this disease belongs to the decreased local and general reaction of the body often associated with general viral and microbial infections.

Infection usually enters the middle ear through the auditory tube. Less frequently infection gets into the middle ear through an injured tympanic membrane or through the damaged mastoid process. In rare cases infection penetrates into the middle ear by haematogenic routes (in infectious diseases).

Three periods are distinguished in a typical course of acute suppurative otitis media. The first period is characterized by the onset and development of inflammation in the middle ear, infiltration and exudation, and development of minor symptoms, such as hearing loss, noise, earache, hyperemia of the tympanic membrane, protrusion of the membrane due to the thrust of the exudate, and some general symptoms such as elevation of body temperature to 38-39 °C, deranged appetite and sleep, indisposition.

The second period is perforation of the tympanic membrane and discharge of pus. All reactions subside. Otopyorrhoea lasts 4-7 days. Perforation of the tympanic membrane sharply changes the course of acute otitis: earache subsides and disappears, temperature normalizes quickly, palpation of the mastoid process becomes less painful, and the general condition of the patient improves.

Inflammation subsides in the third period. Purulent discharge discontinues, perforation closes, and the anatomical and functional condition of the middle ear is restored.

The first period of acute otitis media can sometimes be very grave and attended with hyperpyrexia, severe headache, vomiting, vertigo, and drastic impairment of the general condition, painful palpation of the mastoid process. Changes in the blood of patients with otitis during the first days of the disease are characterized by high leukocyte count with a considerable shift to the left. After perforation of the tympanic membrane and discharge of pus, the blood picture gradually normalizes.

If the disease runs a typical benign course, the patient usually recovers with resolution of the inflammation and complete restoration of the hearing function. If the disease runs an atypical course, the outcomes can be different, with adhesions and commissures between the tympanic membrane and the medial wall of the middle ear and impairs hearing (adhesive otitis media); persistent dry perforation (dry perforating otitis media); conversion of acute disease into its chronic form with persistent perforation and periodic otopyorrhoea; complications, such as mastoiditis, petrositis, labyrinthitis, paresis of the facial nerve, intracranial complications, etc.

Dynamics of basic symptoms of AMO in 3 stages of development of process.

Symptoms	I stage (before-perforate)	II stage (perforation or pus flow)	III stage (scaring or healing)
Pain in ear	sharp	insignificant	absent
Noise in ear	moderate	less expressed	absent
Decrease in hearing	sharply	decreased	restores
Excretions	no	serous-blood, mucous-purulent	stops
Changes in tympanic membrane	infiltrated, hyperemised, protruded	perforation, pulsate reflex	tympanic membrane becomes distinct, appear recognising points (signs), at the beginning short process of malleus and at the end - light cone; scars of perforation of tympanic membrane
Temperature of body	high	subfebril	normal

Differentiate symptoms of AMO from external otitis.

Symptoms	**AMO**	**External otitis**
Pain in ear	Sharp, pulsate, irradiate; accompanied with head ache, heaviness and pressure in ear	Strong, sometimes irradiate, not accompanied by headache; increases during chewing, movement of jaw
Decrease of hearing	Moderate	Hearing is not changed
Noise in ear	Of sharp intensity	Absent. May arise during sharp infiltration of skin of auditory passage and its felling with pus
Character of excretion in acoustic meatus (auditory passage)	Mucous-purulent, serous; blood.	Purulent
Touching of acoustic meatus and tragus	Painless	Sharply painful
Change in tympanic membrane	Depending upon stage of process	Unchanged

Treatment includes sparing conditions at home or at hospital. The diet should be easily and

rich in vitamins to ensure the normal function of the gastro-intestinal tract.

Vasoconstrictors or astringents should be instilled into the nose for restoration or improvement of ventilation and drainage of the auditory tube(naphtyzini, halasolini, sanorini etc.)

In cases of shooting pains and marked redness of the drum, Otipax should be used.

If acute otitis media runs a severe course with marked general and local symptoms, antibiotic is injected intramuscularly for at least 5-6 days. It is necessary to remember that streptomycin, gentamycin, kanamycin and monomycin are contraindicated for local and general use because of their toxic effect on the cochlear and vestibular apparatus. The antibiotic therapy should be combined with nystatin and vitamins.

Analgesics and antipyretics should be given for severe headache and pyrexia. Warming compresses should be placed on the mastoid process. Compresses should be prepared as follows: gauze should be folded four or five times and soaked in alcohol diluted with water (1:1). The compress should be changed at 4-5-hour intervals. A UV-lamp is recommended for warming up the ear.

In rare cases, when this treatment fails and severe pain in the ear persists, the body temperature remains high and the tympanic membrane bulges outside, it is necessary to incise the tympanic membrane. Paracentesis is positively indicated for irritation of the middle ear or meningeal irritation which are manifested by vomiting, vertigo, severe headache, and other signs. Paracentesis is more frequently indicated for children because their tympanic membrane is thicker (especially in nursing infants) and it resists rupture stronger than in adults, while the local and general symptoms (pain, pyrexia) are more pronounced.

Paracentesis. The tympanic membrane is incised using a special needle and observing the rules of asepsis. When performing paracentesis in children, not only the head but the whole body must be immobilized. The incision is made on the drum bulge, well-lit, kept under direct observation and carried downwards in the posterior-inferior quadrant of the drum.

Special conditions must be provided for unobstructed drainage of pus from the ear after paracentesis. This can be attained by inserting a special turunda. The external acoustic meatus must be cleaned thoroughly using sterile hygroscopic cotton with 3% hydrogen peroxide. The ear may be suringed once or twice daily under low pressure along the posterior wall of the auditory meatus. After them the medicinal preparations can be administered into the middle ear through the external acoustic meatus (transtympanic administra-tion).To that end, the mentioned mixture (1 ml) should be instilled into the acoustic meatus and forced into the tympanic cavity by gently pressing the tragus into the external orifice of the acoustic meatus. The medicinal solution can pass the middle ear, the auditory tube, and enter the mouth and nose.

The blowing with balloon of Politcer, catheterisation of the auditory tube facilitates drainage of the middle ear and removes air rarefaction which always attends acute otitis media; blowing is also used to insufflate medicinal preparations. Moreover, this procedure normalizes the function of the auditory tube and has a favorable effect on the course of inflammation. Blowing through a catheter is effective during the third stages of acute otitis media. The procedure should be performed once a day, during 3 or 4 days. A suspension of hydrocortisone mixed with antibiotics should be administered into the middle ear through a catheter.

Prevention includes a combination of measures such as control of infectious diseases, timely treatment of acute and chronic diseases of the nose, paranasal sinuses, and the nasopharynx.

Acute **otitis media in children.** Acute otitis media in neonates and infants occurs much more frequently than in adults. Its course is specific. The special character of the symptoms is determined by the absence of general and local immunity, the morphology of the mucous in the middle ear and the structure of the temporal bone (residues of myxoid tissue, the nutrient medium for infection growth, are present in the tympanic cavity). Inflammation of the middle ear in neonates often develops due to penetration of amniotic fluid into the middle ear through the auditory tube during birth. The infection mechanism in nursing infants is the same, but in addition to infection penetrating from the nose and nasopharynx, food can also pass into the middle ear during regurgitation.

It is more difficult to establish the *diagnosis* of acute otitis media in a nursing infant. But the behavior of a baby with a diseased ear differs substantially from that of a healthy baby. The baby has bouts of inconsolable crying, refuses the breast because of pain during swallowing, rubs his diseased ear against the mother’s hand. The main symptoms of the disease are painful palpation of the tragus

(because of the absence of the bony part of the acoustic meatus) and high body temperature (39.5-40°C). A baby with otitis media is almost always depressed and sleeps a lot; his gastrointestinal function is upset; vomiting develops and wasting ensues. Meningeal symptoms with dimmed consciousness are possible. As distinct from meningitis, this condition is called meningism and is caused by toxaemia (without inflammation of the meninges). Meningism subsides immediately after perforation of the tympanic membrane and evacuation of pus from the middle ear.

The stages of acute otitis media in a child are the same as in adults, except that the child can more frequently recover without perforation of the tympanic membrane because of its higher resistance, high absorbing power of the mucous in the tympanic cavity and easier drainage of the middle ear through the wider auditory tube.

Treatment of otitis media in a child is the same as in adults, but paracentesis at earlier terms is indicated.

Acute otitis media concurrent with infectious diseases runs an especially severe course in septicotoxic forms of scarlet fever, especially in the presence of necrotic affections of the fauces and changes associated with measles and influenza.

The course of such otitis is especially severe because the patient's immunity is weakened by the pathogenic agent of the infectious disease, which penetrates the ear mostly through the auditory tube and, less frequently, by the haematogenic routes.

Two forms of acute otitis concurrent with infectious diseases are distinguished: (1) late (secondary) otitis arising during the late period of infection, and (2) early otitis developing during the initial stage of the infectious disease and having the same signs as the main disease.

Influenzal otitis occurs usually during viral influenza epidemics. The virus penetrates directly into the ear by the haematogenic route or from the upper airways through the auditory tube. Specific influenzal otitis is characterized by haemorrhagic inflammation which is manifested by a pronounced dilatation of the vessels in the external acoustic meatus and the middle ear with extravasation (haemorrhage) under the epidermis in the bony part of the external acoustic meatus and the tympanic membrane. Extravasation appears as haemorrhagic blisters (bullae) in the mucous membrane of the middle ear.

Influenzal otitis is localized mainly in the supratympanic space. Its course is often very severe, because inflammation develops in the presence of general toxemia, sometimes with involvement of the internal ear.

Otitis concurrent with scarlet fever and measles usually does not differ substantially from otitis associated with other infections. The necrotic form of otitis deserves mentioning.

Necrotic otitis in scarlet fever and measles usually develops during the initial stage of the disease, more frequently in the presence of necrotic affections of the pharynx and the nose; in measles, otitis develops simultaneously with rash (or before it). The causative agent of this form of otitis is hemolytic streptococcus. Pathology in the ear develops unnoticed in the septicotoxic forms of scarlet fever and measles. Pain is often absent which can be explained by the necrotic affections of the tympanic membrane; the only manifestation of the disease is profuse purulent discharge from the ear (with pungent putrefactive odour if the bone is involved).

Perforation of the tympanic membrane is vast, to complete destruction. Perforation often occurs during the first days of the disease and persists for a long time. Carious process tends to exacerbation.

Necrotic otitis is characterized by a permanent hearing loss (mixed type). Symptoms of labyrinthine affections sometimes join.

Treatment includes measures directed at eradication of the main disease and its local manifestations. Timely and correct use of antibiotics for scarlet fever and measles has reduced significantly the incidence of purulent otitis associated with these diseases. Severe forms of otitis are very rare now.

Acute mastoiditis is a complication of acute otitis media. This is inflammation of the bony tissue of the mastoid process which occurs in malignant course of acute suppurative otitis media. The inflammation easily extends from the tympanic cavity onto the cells of the mastoid process through the entrance to the antrum due to the high virulence of the microbes

Primary mastoiditis occurs in rare cases associated with injury to the mastoid process, tuberculosis, syphilis, actinomycosis and metastasis in general septicaemia.

Incorrect use of antibiotics therapy for acute otitis and also unreasoned abstention from paracentesis, blowing of tube auditive can cause secondary mastoiditis.

Changes in the mastoid process associated with typical mastoiditis vary depending on the stage of the disease. Mucoperiostal (I) and bone-alterative (II) stages of mastoiditis are distinguished.

Symptoms. The clinical signs of mastoiditis can be local and general. The general symptoms are impairment of the patient's general condition, fever, changes in the blood, etc. They do not differ substantially from those of acute suppurative otitis media.

The subjective symptoms are pain, noise in the ears, and hearing loss. Examination of a typical mastoiditis patient reveals hyperaemia and infiltration in the skin overlying the mastoid process (due to periostitis). The pinna is displaced either anteriorly or inferiorly.

The mastoid process, especially the apex, and sometimes its posterior margin, are very tender to palpation. Inflammation in the mastoid process can be activized causing subperiosteal abscess due to passage of pus from the mastoid cells to the periosteum. The differential blood count shifts to the left; the leukocyte count is moderately high; the ESR gradually increases.

The specific otoscopic symptom of mastoiditis is sagging soft tissue of the posterior-superior wall of the bony part of the external acoustic meatus at the tympanic membrane (the anterior wall of the antrum). Otopyorrhoea is often pulsating and profuse. The consistency of pus is often creamy. Pus can fill the acoustic meatus immediately after its cleaning.

Zygomatic abscess. It is due to infection of zygomatic air cells situated at the posterior root of zygoma. Swelling appears in front of and above the pinna. There is associated oedema of upper eyelid. Pus in these cases collects superficial or deep to temporalis muscle.

The apex- cervical forms of mastoiditis:

Bezold's abscess. It is seen when pus breaks through the tip of mastoid into the sheath of sternomastoid muscle. A swelling is seen in the upper part of neck.

Citelli's abscess. In this case pus breaks through inner table of mastoid tip and travels along posterior belly of digastric muscle. Swelling is seen in the digastric triangle of neck.

Orleansky. Pus spread to the parapharyngeal space through the stylomastoid foramen.

Mure. Pus spreads through the medial plate of the mastoid tip to the retropharyngeal space.

Masked (latent) mastoiditis

It is a condition of slow destruction of mastoid air cells but without the acute signs and symptoms often seen in acute mastoiditis. There is no pain, no discharge,no fever and no mastoid swelling but mastoidectomy may show extensive destruction of air cells with granulation tissue and dark gelatinous material filling the mastoid. It is not surprising to find erosion of the tegmen tympani and sinus plate with an extradural or perisinus abscess.

Aetiology. The condition often results from inadequate antibiotic therapy in terms of dose, frequency and duration of administration.

Clinical features. Patient is often a child, not entirely feeling well, with mild pain behind the ear but with persistent deafness.

Tympanic membrane appears thick with loss of translucency. Slight tenderness may be elicited over the mastoid. Audiometry shows conductive hearing loss of variable degree. X-ray of mastoid will reveal clouding of air cells with loss of cell outline.

***PETROSITIS*.** Spread of infection from middle ear and mastoid to the petrous part of temporal bone is called petrositis.

Like mastoid, petrous bone may also be pneumatised but only in about 30% of individuals. Two groups of air cell tracts lead from mastoid and middle ear to the petrous apex.

Gradenigo's syndrome is the classical presentation and consists of a triad of external rectus palsy(VI th nerve palsy), deep-seated orbital or retro-orbital pain (V th nerve involvement) and perisistent ear discharge.

Persistent ear discharge with or without deep-seated pain inspite of an adequate cortical or modified radical mastoidectomy also points to petrositis.

Fever, headace, vomiting and sometimes neck rigidity may also be associated

Diagnosis. Roentgenography of the temporal bone is very important for diagnosis. An X-ray picture shows diffuse reduction of pneumatization and shaded antrum and the cells. During later stages

of the disease the bony septa can be destroyed with formation of clear sites on X-ray pictures (due to destruction of bone and accumulation of pus).

Treatment. Depending on the stage of acute otitis media and mastoiditis. Conservative treatment includes administration of antibiotics and sulpha preparations (locally and intramuscularly). The patient should first be tested for sensitivity to these preparations; their effect on the microflora in the ear should also be tested. Desensitizing preparations and physiotherapy (UHF, SHF, wanning compresses on the ear and the mastoid process) are used. The condition of the nose, the paranasal sinuses and the nasopharynx should be thoroughly examined in each particular case, especially in children.

If conservative treatment fails, objective symptoms intensify, and complications develop in the areas adjacent to the middle ear, surgical intervention is necessary.

Basic differential diagnostic symptoms of AMO and mastoiditis.

Symptoms	AMO	Mastoiditis
General (overall) condition	Improves	Inspite of treatment deteriorates
Pain in ear	After perforation decreases	Inspite of perforation does not decrease
Noise in ear	Gradually decreases	Inspite of treatment does not decrease
Hearing	Improves	Does not improve
Excretion from ear	Stands less, after then disappears. From serous - blood and mucoid-purulent stands mucoid	Purulent; purulent-blood in very big quantities
Palpation of mastoid process	Painless, may be painful during the first days of disease (mastoidal reaction)	Sharply painful
Skin of postauricular region	Unchanged	Infiltrated, swollen mastoid process, smoothness of postauricular fold
Change in tympanic membrane and external acoustic meatus	Correlative to stages	Infiltrated, thickened (mastoidal type); hanging of posterio-superior wall of acoustic meatus
Percussion of mastoid process	Painless	Painful

Differentiative symptoms of mastoiditis and furuncul of external acoustic meatus.

Symptoms	Function of external acoustic meatus	Acute mastoiditis
Spontaneous pain	Increase during chewing (mastication)	Does not increase while chewing (mastication)
Pain caused by pressing	Maximum while pressing on tragus	Maximum while pressing on mastoid process
Pain cased by pulling the auricle	Extremely painful	Painless
Condition of external acoustic meatus	Swelling of skin of cartilaginous part	Swelling of bony part (hanging of posterior wall)
Tympanic membrane	Normal	Changed
Hearing	Normal	Decreased
Temperature	Normal or slightly increased	Increased nearly always

The operation on the mastoid process, known as mastoidectomy, is performed under local and sometimes under general anesthesia.

Indication:

1. Acute coalescent mastoiditis.
2. Incompletely resolved acute otitis media with reservoir sign.
3. Masked mastoiditis.
4. As an intial step to perform:

(a) endolymphatic sac surgery
(b) decompression of facial nerve
(c) translabyrinthine or retrolabyrinthine procedures for acoustic neuroma.

Patient lies supine with face turned to one side and the ear to be operated upper most. A curved incision is made behind and following the attachment of the auricle. The incision extends from a point on a level with the upper margin of the pinna to the mastoid tip. In infants and children up to 2 years, the incision is short and more horizontal. This is to avoid cutting facial nerve which is superficial in the lower part of mastoid. Incision cuts through soft tissues up to the periosteum. Temporalis muscle is not cut in the incision. Periosteum is scraped from surface of mastoid and posterosuperior margin of osseous meatus. Tendinous fibres of sternomastoid are sharply cut and scraped down. The lips of the wound are drawn apart with retractors to keep the mastoid surface open for examination. Should a fistula be darkened and soft portions of bone be discovered, the operation must be started at this place. Should a fistula be absent, the operation must be started in a typical place determined by landmarks. The upper border of the operative area is the temporal line; the anterior border is the spine above the external auditory meatus and the latter's posterior wall. Trephination is begun by attacking the bone right behind the spine on the *planum mastoidenum* to the antrum. In an adult antrum lies 12-15 mm fromthe surface. Horizontal semicircular canal is identified.

All the carious and soft bones should be removed carefully until the antrum has been exposed. The antrum is then widened somewhat with a small curette, and the granulations are thoroughly scraped out with utmost care. Care must be taken in opening the mastoid process to avoid injury to the sigmoid venous sinus, the dura mater, the middle cranial fossa, the facial nerve and the external semicircular canal. Lateral wall of the mastoid tip is removed exposing muscle fibies of posterior belly of digastric. Zygomatic cells situated in the root of zygoma, retrosinus cells lying between sinus plate and cortex behind the sinus are removed.

The operation is usually concluded by filling the wound with antibiotic powder and packing it lightly with tampons. Sometimes mastoid cavity is thoroughly irrigated with saline to remove bone dust and the wound closed in two layers. A rubber drain may be left at the lower end of incision for 24-48 hours in cases of infection or excessive bleeding. A meatal pack should be given to avoid stenosis of ear canal. Mastoid dressing is given.

Antibiotics started pre-operatively are continued post-operatively for at least one week. Culture swab taken from the mastoid during operation may dictate a change in the antibiotic.

Complications:

1. Injury to facial nerve.
2. Dislocation of incus.
3. Injury to horizontal semicircular canal. Patient will have post-operative giddiness and nystagmus.
4. Injury to sigmoid sinus with profuse bleeding.
5. Injury to dura of middle cranial fossa.
6. Post-operative wound infection and wound breakdown.

Prognosis is favourable provided the patient applies to the doctor in due time and is given effective treatment.

Prophylaxis consists in early and rational treatment of acute otitis media.

Mastoiditis (antritis) in children. The mastoid process is underdeveloped in neonates and nursing infants; only a prominence can be found at the place of its future location. There is an antrum in this prominence, into which the purulent process extends from the middle ear. A subperiosteal abscess is likely to develop if the petrosquamous and tympanomastoid fissures are not closed.

The local *symptoms* are few. The otoscopic picture is characterized by indistinct topography of the tympanic membrane; its color can be pink or slightly yellowish. X-ray pictures of temporal bones reveal decreased transparency of the antrum in some cases.

Antritis is always associated with a vigorous general reaction of the child's gastrointestinal

tract, the respiratory and nervous systems. The child's conduct varies from flaccidness to excitation; he cries, does not sleep; the symptoms of meningitis are not infrequent. Appetite is very poor, stools are frequent and liquid, and the baby loses his weight. The skin is pale-grey and moist; the heart sounds are dull, the pulse is frequent; tachypnoea develops. The temperature reaction does not always agree with severity of the condition. Body temperature can be normal, subfebrile or be as high as 38-39°C. The blood picture is characterized by neutrophilic leucocytosis; the ESR is accelerated.

Treatment includes local therapy and intramuscular injections of antibiotics. UV-therapy is helpful.

Surgical treatment includes antral puncture, antrotomy, and mastoidotomy (in children after three ears age).

Assignment for self control of knowledge.

1. Indicate, which is the most probable path of entrance of infection into middle ear observed in patients with bilateral AMO, if from the anaemnesis it is known, that for first time he felt pain in ear and decrease in hearing 3 days before during work in caisson: a) haematogenic; b) labyrinthogenic; c) lymphogenic; d) tubogenic;
e) tympanogenic
2. For I stage of AMO it is characteristic: decrease in hearing, noise in ears, increase in temperature of body, hyperaemia and infiltration of tympanic membrane. Which symptom is not named?
3. Patient from evening felt pressing pain in right ear, temperature of body raised up to 39 C, appearance of abundant cream like excretions from ear. In anaemnesis patient has acute purulent middle otitis, on which he unsuccessfully treated himself in household conditions. During examination - infiltration of tissue in post auricular region, mastoid process painful during palpation. Which decision should doctor accept?
4. Which dominate factors play role in pathogenesis of acute middle otitis?
a);b);c)
5. Beside above indicated, enumerate the factors, contributing development of acute purulent middle otitis in children of breast age.
a);b);c);d);e)
6. Which complications can be observed during acute purulent middle otitis?
a);b);c);
7. Enumerate basic symptoms of first stage of acute purulent middle otits
a);b);c);d);e)
8. Name indications of parascenthesis during acute purulent middle otitis.
a);b);c);d);e);f)
9. Enumerate basic otoscopic symptoms of second period of acute purulent middle otitis.
a);b);c)
10 Enumerate basic methods of treatment of acute purulent middle otitis, used in first stage.
a);b);c);d);e)

Standards of answers to the assignment of self control of knowledge.

1. d/ tympanogenic.
2. Sharp pain in ear.
3. You must to suspect complication of acute otitis (mastoiditis)and to hospitalise patient in specialised ENT ward.
4. a) High virulence of micro-organism. b) Presence of accompanying diseases, leading to decrease of resistance. c) Disturbed ventilate and drainage function of auditory tube.
5. a) Frequent ARVI. b) Peculiarities of structure of auditory tube. c) Frequent hyperplasia of lymphadenoid pharyngeal ring.
6. a) Different types of acute mastoiditis. b) Intracranial complications. c) Serous and purulent labyrinthitis.
7. a) Pain in ear. b) Noise in ear. c) Decrease in hearing. d) High temperature. e) Otoscopically - hyperaemia, infiltration; protrusion of tympanic membrane.
8. a) Triad of symptoms: protrusion of tympanic membrane, sharp pain in ear, high temperature. b) Mastoidal reaction. c) Meningism. d) Paresis of facial nerve.

e) Irritation of labyrinth. f) Parenteral dyspepsia, toxic pneumonia in children of breast feeding age.

9. a) Purulent excretion in acoustic meatus. b) Hyperaemia, infiltration of tympanic membrane. c) Perforation of tympanic membrane

10.a) General: antibiotics, sulphanilamide preparations, analgesics.b) Pathogenetic: sanation of nose & nasopharynx.c) Parascenthesis.d) Carbol-glycerine drops in ear. e) Heating compress, sollux, quartz.

Solve the following situational task.

Task 1. Woman patient, 32 years old, complains on strong pain in right ear, irradiating into teeth, temple, stiff nose, head ache, raise of temperature of body up to 37,8 C. Sick third day, disease preceded by running nose. Objectively: auricle unchanged, external acoustic meatus is free, tympanic membrane is red, protrusion, recognising points are not defined. Palpation of tragus and mastoid process is painless. Whispering speech is accepted by right ear at a distance of 1 m., and conversational speech - 3m. Put the diagnosis and prescribe the treatment.

Task 2. Patient (woman), 40 years old, complains on pain in right ear, pus flow from it, decrease of hearing, headache, raise in temperature to 37 C, overall (general) condition is bad. Patient is sick since last 12 days. After running nose stiffness of right ear,pain,fever appeared. After 2 days pus flow from ear started, pain decreased, temperature lowered. Underwent treatment in polyclinic, but pus flow continued. Around two days before pain in postauricular fold, headache appeared, temperature in last days raised once again up to 37 C.Chills vomiting were absent. Objectively: the auricle unchanged, external acoustic meatus is narrowed in bony part due to hanging of posterior-superior wall, there is excretion of mucous-purulent character. Tympanic membrane is red, infiltrated,there is fissure perforation into anterior-inferior quadrants with pulsation of pus. Swelling of mastoid process is determined, smoothness of contours; soft tissues are swelled, painful during palpation. Whispering speech is accepted by right ear at a distance of 0.5 m., conversational - 2.5 m. Put diagnosis. Prescribe examination and treatment.

Task 3. Child, 8 month old, after undergoing ARVI for a period of 2 days stood restless, in a period of 2 days, frequently cries, swings with head from side to side, extends with hand towards right ear, refuses to suck breast. Temperature of body 39.2 C. From questioning of mother it was established, that the child hard tremors of shored period, multiple vomiting, diarrhoea. During otoscopy - right tympanic membrane is red, protruded, recognising points are not determined, pressing on tragus is painless. Left tympanic membrane is unchanged. Put the diagnosis, prescribe treatment.

Task 4. Patient, 45 years, complains on pain in the region of neck and in postauricular region, abundant excretions from the right ear. Pain developed in ear 2 days before, but purulent excretions are observed already 2 weeks. He was underwent by outpatient treatment. Objectively: Into external acoustic meatus there are abundant mucous-purulent excretions, tympanic membrane is infiltrated, in the centre there is focal perforation,pain presence during palpation in apex of mastoid process and sternocleidomastoid muscle. Whispering speech is not heard by the patient by right ear. Left ear - without any changes.

What is the assumed diagnosis ?

Which are the additional examinations necessary for verification of diagnosis ?

How to treat the patient ?

Scheme of independent work on cleaning of external acoustic meatus.

1. Hold with I - II fingers of left hand piece of cotton and make it thin by stretching it will small movements of I -II fingers of right hand in sides.
2. Continuing to hold cotton, take auricular probe with the right hand and place it's distal part on a piece of cotton, stepping back by butt-end of probe by 2-3 mm from the edge of cotton.
3. Simultaneously turn 1-2 time the handle of probe along clockwise direction by I-I fingers of right hand.
4. Place the prepared cotton in tray, take auricular funnel and conduct otoscopy.
5. Continuing to hold funnel with the fingers of left hand take the prepared cotton with the right hand in such way, so that I finger is located below and II-III fingers above I finger and bring it close to external acoustic meatus (toward external aperture of auricular funnel).
6. Not changing the position of auricular funnel and fingers of right hand, carefully drench the accumulated exudate in external acoustic meatus.

7. Remove from external acoustic meatus funnel and place it along with cotton in tray used instruments.

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Practical lesson 7

Topic: Chronic purulent middle otitis. Labyrinthitis

Reason: The frequency of chronic suppurative inflammation of the middle ear, its aggravation leading to a temporary and sometimes permanent loss of working ability, to the development of diminished hearing and other dangerous complications define social significance of the disease. Any physician must know the symptoms of chronic suppurative middle otitis and its complications. He must to be able to prevent its development, and if necessary he must send the patient to the hospital for urgent treatment.

A student ***should know*** :

- general and local factors, which promote to the development of the chronic inflammation of the middle ear ;
- classification of the clinical forms of chronic otitis ;
- clinical picture of different forms of chronic otitis ;
- the methods of conservative and surgical treatment of chronic otitis;
- clinics, diagnostic methods, treatment of labyrinthitis.

A student *should be able* :

- choose information from the facts of anamnesis , which directs on the chronic pathology of the middle ear ;
- compose the individual scheme of diagnostic search ;
- reveal the most informative signs of chronic pathology of the middle ear ;
- make a differential diagnostics between different form of chronic otitis ;
- make a differential diagnostics between labyrinthitis and pathology of cerebellum ;
- choose the plan of individual treatment of a patient ;

Equipment: tables, dummies, simulators, multimedia presentations, video films, tool sets, tuning forks, tomograms, radiographs, etc.

Plan

№№	The name of the composition of the class	Hour
I.	Organizational moment (greetings, checking those present, announcing the topic, the purpose of the lesson, motivating students to study the topic).	7
II.	Control of supporting topics.	38
2.1	Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units).	8
2.2	Questions (test tasks, problems, clinical situations) to check basic knowledge on the subject of the lesson.	30
III.	Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.).	40
3.1	Content of tasks (tasks, clinical situations, etc.).	20
3.2	Recommendations (instructions) for performing tasks (professional algorithms, orienting maps for the formation of practical skills and abilities, etc.).	3
3.3	Requirements for work results, including to registration	2
3.4	Control materials for the final stage of the lesson: problems, tasks, tests, etc. (if necessary).	15
IV.	Summing up.	5

A task for self- preparation.

A student should have basic knowledge for realisation of the lessons aims :

1).To interpret the clinical anatomy and physiology of hearing organ
2).correctly interpret the morphology of inflammatory processes
To interpret the X- rays anatomy and X – ray semiotics of ear and skull
.What is the reason of chronic purulent inflammation of the middle ear?
2. The main pathogenetic factory of the disease.
Classification and clinics of chronic middle otitis:
1. Obligatory sings of chronic purulent middle otitis.
2. Two forms of the disease.
3. Clinical characteristic of epitympanitis.
4. Clinical characteristic of mesotympanitis.

Cholesteatoma: theory of formation, mechanism of bone destroying.
Treatment:
1. Investigation of the patient with chronic purulent middle otitis.
2. Conservative treatment: general treatment; local sanative treatment – two stages; physiotherapy
3. Surgical treatment: indications to radical operation of ear; technics of radical operation of ear; five types of tympatoplastics on Vulshteyn; contra-indications to tympatoplastics.

Labyrinthitis:
1. Aethiology of labyrinthitis.
2. To determine the meanings acute and chronic, limited and diffuse, serous, purulent, necrotic labyrinthitis.
3. Division of labyrinthtitis depending on the ways of penetration of infection in internal ear, its clinics: tympanogenic; meningogenic; haematogenic; traumatic.
4. Differential diagnostics of different forms of labyrinthitis and other diseases (abscess of cerebellum, arachnoiditis).

Treatment of labyrinthtitis: conservative; surgical.

Tests for self-control

1. Mesotympanitis is characterized by small lowering of hearing; noise in the ear; periodic acute conditions in the ear. What doesn`t be indicated?

2. A patient suffers from epytimpanitis, complicated by paralysis of face muscles. Is it expediently to prescribe drops to the ear of boric spirit, antibiotics, to ablate granulations, to wash cholesteatoma or nacesary to make an operation?

3. A patient has suppuraton in the left ear from the childhood. Last time it lowered, but headache, hardness, systematic giddiness, especially during ablation of pus from ear, appeared. What is diagnosis? What should the doctor decide?

4. A patient M., 56 years of age, entered to the hospital with complaints on suppuration from the right ear, lowering of the hearing on this ear. He has been ill for a number of years. Otoscopy: AD – there is poor pus in external acoustic meathus. Tympanic membrane is perforated in back-upper quadrant, perforation is marginal.

The patient is proposed sanation radical operation on this ear.

a) Is the volume of examinations sufficient for solution about surgical treatment?
b) What additional methods of examination are necessary?
c) What is your treatment in case of patient's refusal?
d) What cases is operation necessary urgently to the patient in?

5. Name the main principles of conservative treatment of chronic purulent middle otitis.

6.What factors are the base of appearance of chronic purulent otitis?

7.Name the main reasons of acute condition of chronic middle otitis.

8.Name the main otoscopic signs of chronic purulent mesotympanitis in remission: a); b)

9.Name the main otoscopic signs of chronic purulent epitympanitis in remission: a); b); c)

10.What ways of spreading of infection in labyrinthus do you know?

11.What are the from of labyrinthitis depending on spreading of a process? a); b)

12. How are diffuse labyrinthitis divided on the character of inflammatory process? a) b) c)

13. When do vestibulo-sensor reaction appear?

a) At acute labyrinthitis, acute stage of chronic labyrnthitis, at big irritation of labyrinthus; b) at acute salpingootitis.

14. What does the labyrinthus giddiness have at acute diffuse labyrinthitis?

a) has systematic, rotative character is accompanied by vegetative reactions, is observed spontanious rhythmical nystagmus;

b) is accompanied by general asthenia, dimness in the eyes, diplopia.

15. For getting of review X-ray picture of the ear is nessesary on:

a) on Shuller (temporal-tympanic projection)

b) on Mayer (fromtal-typanic projection)

c) on Stenvers (in occipital-acousic projection)

16 What stacking does allow at X-ray research to value the type of structure of mastoid process and position of sinus?

a) on Shuller; b) on Mayer; c) on Stenvers

17. What stacking does allow to value the condition of the walls of osseous acoustic duct, of tympanic cavity, aditus ad antrum, antrum?

a) on Shuller; b) on Mayer; c) on Stenvers

18. What stacking does allow to value the condition of labyrintus and apex of pyramid?

a) on Shuller; b) on Mayer; c) on Stenvers

19. What localization of perforation of tympanic membrane will the lowering of hearing be the biggest at?

a) total defect

b) marginal in pars flaccida

c) central in pars tensa

Home-task.

Solve the following situation's sums, give the answers to your teacher.

Sum 1. A patient 10 years of age, has complaints on suppuration from the right ear during 3 years. Otoscopy: there is mucous- purulent excretion in external acoustic duct, there is central perforation in pars tensa of tympanic membrane, through which you can see pale-pink medial wall of tympanic cavity. Hearing of the right ear is 3m of whisper speech from aural helix.

What is the diagnosis? What is the treatment of the patient?

Sum 2. A patient 7 years of age, has suppuration from the right ear during 3 year. There is big lowering of hearing last time. Otoscopy: there is a small amount of thick pus with annoying smell in external acoustic duct. There is perforation in back-upper quadrant of tympanic membrane; it is mostly on pars flaccida and passes on osseous margin of internal ring of external acoustic duct. We observed grey- white masses in aperture of perforation. There is a part of bared bone at probe of epytimpanic spase. Hearing on the right ear is whisper speech at helix.

What are the diagnosis and treatment?

Sum 3. A patient A., 39 years of age, was hospitalized to the clinic for investigation with suspicion on Menier's disease. During last 3 years she hat periodical giddiness of systemic character (sensation of moving of surrounding subjects), appearing at head inclinations, which is accompanied by nausea, general asthenia, increased disposition to sweat.

There we three attack of vestibular disorders, which was accompanied by vomiting. A patient had small suppuration from the left ear since childhood. It stopped to the moment of appearance of vestibular disorders.

Otoscopy: there is norm at the right side. At the left is marginal defect of tympani membrane, which is thickening, pink; moist mucous membrane of seen part of tympanic cavity; there are rough bone and write masses of cholecteatoma at probe of attic. There is a picture of compression of pyramid's structure at the left, cells of pneumatic system of processus mastoideus don't differentiate on X-rays of temporal bones on Shuller.

Hearing of the left ear is : whisper is at helix ; speech is from 0,5m. Tone audiometry exposed mixed hardness of hearing : descending character of curves rapids of hearing with increasing its in gone of speech frequences on osseous conduction to 10 decibels, on air conduction – to 38 decibels.

We found spontaneous disorders at research of vestibular function. They are : giddiness of systematic character and breach of balance : rocking to the both sides in Romberg's pose, at walking forward and back.

Nystagmus is spontaneous; pressor one is not here.

1. Give the determination of marginal perforation.
2. Give the determination of spontaneous vestibular disorders.
3. Put the diagnosis.

Scheme OOD "Checking up of patient with chronic otitis".

Anamnesis : you should ascertain common anamnestic facts (carried diseases, prof. harmfulness) what worries the patient, when and what is the reason of process development. You should expose hearing changes. It is important to expose noise in the ears, its character, time of appearance, duration, irradiation. Excretions from the ear-beginning, duration, character, amount, smell, consistence. Disorder of balance (giddiness, nausea, vomiting, sensation of fall) – when appear, character, duration, periodicity (systematic or subjective). Headache-localization, character, reason, periodicity.

Then there is examination of ENT-organs. Examination of nose, pharynx, epipharynx, ear. Objective examination of the ear: we exam helix, palpate lymphatic nodes in circle of acoustic duct and processus mastoideus. We determine the presence of painful parts, infiltrats; painfulness at pressing on tragus. Also we draw off helix and exam skin of external acoustic duct.

Otoscopy : there is endoscopic method of external acoustic duct, tympanic membrane and its defecs and tympanic cavity. At otoscopy we draw off helix upper and introduce aural funel into acoustic duct. We should exam tympanic membrane and perforation. That's why we should move all the secrete from acoustic duct at its presence there. It is necessary to determine the character pus, consistence, smell, admixtures. After study of tympanic membrane, you should put down the perforation into the scheme : AD AS

Investigation of hearing by speech and tuning forks is carried out after ear examination and information is put down into hearing passport :

	AD	**AS**
Whisper		
Speech		
C 128		
C 2048		
Veber		
Rinne		
Shwabach		
Federichi		
Zhelle		

The scheme of insufflation of powdery remedy into tympanic cavity.

1. Take the powder insufflator into the right hand; cotton bead, moistened by spiritus; wipe the tip of powder's insufflator.
2. Put the powder insufflator on the table; the tip should be from above; cotton bead should be thrown into the tray. Take the aural funnel and make the otoscopy.
3. Take powder insufflator into the right hand, disposing I finger on the back surface of rubber tank, II and III fingers are from above and from below of its narrow part, which connects with the tip. The left hand retains funnel in those position.
4. Bring powder insufflator to the patient's ear, disposing the end of the tip in socket of aural funnel. Its longitudinal axes should coincide. Continue to retain aural funnel by the left hand. Don't change the position of the right hand.
5. Don't change the position of aural funnel and powder insufflator. Squeeze the rubber tank of powder insufflator, directing the steam of air and powder from the canal of external acoustic duct by short moving of I-III fingers of right hand.
6. Don't change the position of aural funnel and fingers of the right hand. Then move of the tip of powder insufflator from the canal of aural funel and stop the pressure of I-IIIfingers of the right hand on the tank.

Standart answers to the task for self- control

1. Serous-mucous excretion
2. Only surgical treatment
3. Chronic epitympanitis. Limited labyrinthitis. He is need in urgent surgical help.
4. a) insufficient;
   b) it is necessary to research the hearing; speech, tuning fork, audiometry, X-ray of processus mastoideus on Shuller, Mayer.
   c) clinic observation, bathing of attic by disinfectant solutions by Gartman's neddle
   d) at presence of complications
5. a) sanation of nose, paranasal sinuses of nose, epi- and mesopharynx;
   d) measures are directed on normalization of organism's reactivity;
   e) local sanation treatment : mechanic ablation of pus from ear and excretion of remedies into tympanic cavity;
   f) physiotherapy;
6. high virulence of microorganisms; lowering of organism's resistibility; pathology of upper respiratory ways; unrational treatment of acute purulent middle otitis; 7. ORVI; children's infections; influenze; hit of water into the ear; adenoidit;
8. a) central perforation in tight part of tympanic membrane;
   b)pale mucous membrane of medial wall of tympanic cavity.
9. a) marginal perforation in pars flaccida of tympanic membrane;
   b) cholesteatoma; c)pus with annaging smell
10. a) haematogenic; b)tympanognic; c)meningogenic;
11. a) circumscribed; b) diffuse

12. a) serous; b) purulent c) necrotic;
13. a); 14.a) 15. a) 16.a) 17.b) 18. c) 19.a)

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Practical lesson 8

Topic: «Nonpurulent pathology of the ear»

Reason: Acute worsening of hearing, and communication in examined patients are noted in unsuppurative ear diseases. The loss of hearing is often accompanied by terrible noises in the ears and affects the ability to work and moral state. A child, who loses hearing at an early age can't speak and becomes deaf and dumb usually. The vestibular disturbances are as bad as the loss of hearing as a result of worsening the working ability for a long time and they may even lead to disability. This underlines the social importance of unsuppurative ear diseases.

The lesson's aim. A student *should know* the following after the study of this theme:
- The reasons of an appearing of otosclerosis, exudative otitis, cochlear neuritis;
- Pathogenesis of these diseases with knowing of a localization of the pathological process;
- The main symptoms of otosclerosis, exudative middle otitis, cochlear neuritis; signs of every disease; degree of injury of conducting and sound –perceiving apparatus.

To be able: - Diagnose unpurulent ear's diseases on its main signs;
- Use tuning forks, pneumatic Zigl's funnel, blow of the ear by Politser's tank.
- Make a differential diagnosis between diseases, caused by disturbance of sound-perceiving and neuritis of cochlear nerve.

Equipment: tables, dummies, simulators, multimedia presentations, video films, tool sets, tuning forks, tomograms, radiographs, etc.

Plan

№№	The name of the composition of the class	Hour
I.	Organizational moment (greetings, checking those present, announcing the topic, the purpose of the lesson, motivating students to study the topic).	7
II.	Control of supporting topics.	38
2.1	Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units).	8
2.2	Questions (test tasks, problems, clinical situations) to check basic knowledge on the subject of the lesson.	30
III.	Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.).	40
3.1	Content of tasks (tasks, clinical situations, etc.).	20
3.2	Recommendations (instructions) for performing tasks (professional algorithms, orienting maps for the formation of practical skills and abilities, etc.).	3
3.3	Requirements for work results, including to registration	2
3.4	Control materials for the final stage of the lesson: problems, tasks, tests, etc. (if necessary).	15
IV.	Summing up.	5

Methodic materials and recommendations for the self-preparing.

You should begin to study this theme from the repetitions of knowledge on anatomy of a middle ear with a help of textbook, plaster casts and tables. This makes easy the understanding of etiology and pathogenesis of unpurulent ear pathology and also helps to choose the most rational method of the treatment.

An ability to choose the main symptoms of patient's diseases on the base of his complains, external condition, otoscopic facts has a great significance in a diagnostics of these diseases and differential diagnosis.

Reference map.

Cochlear neuritis:

1. What infectional diseases do the most frequently call degenerative changes in the cochlea.
2. Enumerate the medicines having an ototoxic action.

3. Enumerate the main reasons of vascular disturbances, determining the appearing of cochlear neuritis.
4. Does the trauma play a role (acoustic, mechanic) in a pathogenesis of a cochlear neuritis?
5. Pathogenetic changes in internal ear by cochlear neuritis.
6. Character of lowering of hearing.
7. Noise in the ears, its frequent characteristics;
8. Otoscopic picture;
9. Compose the hearing passport of a patient with cochlear neuritis;
10. The type of audiometric curve, give the explanation;
11. What are the stages of neuritis on a clinical current?
12. Necessity of differential treatment (dependence on etiological factors);
13. A complex of medical measures:Antiinflammatory therapy; Disintoxication therapy; Vascular broadening remedies, spasmolytics, thrombolytics;Medicines, promoting dissolution of atherosclerotic deposits; Medicines, improving coming through the narrow capillaries of erythrocytes mass; Remedies, having anticholinesterase' action, improving a conducting of nerve tissues; Physical methods; Hyperbarooxygenation etc.

Otosclerosis:

1. Is the reason of otosclerosis known?
2. Do the pregnancy and a child-birth change a progression of a disease?
3. Hereditary diathesis.
4. Localization and a morphologic substratum of a pathoanatomic changes .
5. Subjective symptoms of otosclerosis.
6. Objective symptoms of otosclerosis, results of otoscopy.
7. Name the type of hardness of hearing at the initial stage of a disease.
8. Give the characteristics of audiogram at the mixed form of a hearing loss.
9. The main kinds of operations on the stapes in otosclerosis.
10. Give the characteristics of the optimal variant of audiogram for operations
11. Make a differential diagnosis of conductive and neurosensory hearing loss

Exudative otitis: Etiology, pathogenesis, clinics and the methods of treatment

Adhesive otitis: reasons of development, methods of treatment.

You should solve some situational problems for a fixing of this material:

Task 1. A female patient, 27 years old, took a medical advice with complains on a lowering of hearing and a constant noise in her ears. The lowering of hearing was gradual, it begins from a child birth. At that time she took a lot of medicines, including antibiotics because of pathologic pregnancy. As she said, that her mother suffered from a hardness of hearing (mother dead few years before). She working in a noisy shop, but this noise doesn't disturb her, she quite simple understand the words of every talking man.

At objective research: our patient is somatically healthy, but has an inclination to a hypotonia. At external examination there is a little blueness of sclera. At otoscopy: acoustic duct is wide, without ear-wax, tympanic membrane is very thin and has a pink color in a center.

The Federiche's and Rinne's tests are negative from a both sides at a research by a tuning forks. Tuning fork C_{2048} is percepts well. There is double-sided hardness of hearing on the audiogram. Inspection of a middle ear was done and a tympanic cavity was seen with a help of microscope to precise the diagnosis. We found a dense osseous formation, fixing in the front parts of a stapes base in the region of a vestibular window. A doctor should choose the most rational variant of operation with this pathology of the ear, give the recommendations to the patient in the first days after operation and medical therapy.

What is your solution to this task? Let's try to solve it together. As you can see from a sum's conditions, the patient has probably otosclerosis.

Answer the following questions.

1.) What typical for otosclerosis etiologic factors did the patient showed at examination on?

a.) Pregnancy and child-birth;
b.) Applying of antibiotics;
c.) Hereditary diathesis;
d.) Ear diseases.

2.) What typical for otosclerosis symptoms, were revealed at a questioning of a patient?
a.) Sensation of the constant noise in the ears (low-frequency);
b.) Improving of hearing in the noise situation;
c.) Sensation of pulsative noise in the ears (ringing, peep);
d.) Loud talk worsens a speech perception
3.) What objective symptoms are character for otosclerosis?
a.) Fair-haired; blueness of sclera;
b.) Dull, drawn in tympanic membrane;
c.) Pink promontory appears through unchanged tympanic membrane;
d.) Membrane is drawn in and soldered to promontory;
4.) What results of a tuning forks tests are typical for otosclerosis?
a.) Positive Rinne's test;
b.) Negative Federiche's test;
c.) Positive Zhelle's test;
d.) Sharp lowering of perception of C_{2048};
5.) What audiogram is character for a mixed form of a hardness of hearing caused by otosclerosis?
6.) What is a pathoanatomic picture in otosclerosis?
a.)There are commissures in the region of vestibular window;
b.)Spongy bone forms in the region of stapes base and vestibular window;
c.)Lime deposits develops in tympanic membrane;
d.)Stapes is fixed by tympanosclerotic deposits;
7.) What is the most optimal variant of audiogram for an operation at otosclerosis?
a.)Osseous conduction is lowered together with air one, bone-air break doesn't exceed 10 dB;
b.)Big bone-air break on the right (40 dB) at a lateralization of a sound in the left ear;
c.)Double-sided bone-air break to 40 dB at a small lowering of a sound perception (to 25 dB on a high sounds);
d.)Bone-air break from a both side to 25 dB, at a great lowering of osseous conducting to 50-60 dB.
8.) What variant of operation is the most rational with this pathology?
a.) Paracentesis with an introducing of a drain-pipe;
b.) Tympanoplastics;
c.) Mobilization of stapes with a fenestration of a foot plate;
d.) Piston stapedoplastics or stapedoplastics with Teflon's prosthesis.
9.) What recommendations can be given to the patient in first days after operation?
a.) To lie immovably for a 10 days;
b.) To allow to move from the 1st day;
c.) Gradual activation of a patient depending on his feels;
d.) Semi-bedding regimen from the 1st day;
10.) What medicines are given from a first day after operation?
a.) Antibiotics;
b.) Narcotics and soporifics;
c.) Diaphoretic and anti-cough remedies;
d.) Hormonal medicine on the scheme.

Task 2. A patient of 40 years old took a medical advice with a complaints on lowering of hearing in the right ear. The noise is like "hissing of fat on flying-pan". The lowering of hearing has inconstant character: in a lying position hearing improves on the ill ear, but when the patient gets up from the bed, the ear became blocked. The hearing improves for the same time at blowing. Also she says, that she was suffered influence for a two weeks before. Blocking of the nose, periodical headache and small purulent secretions, coming through the epipharynx left after the influence.

There is drowning in of a tympanic membrane, light cone is absent, malleus shaft is shortened, its short appendix remain standing and folds is contour at otoscopy. Tympanic membrane is of unusual straw-yellow color and we can see the bubbles of liquid at attentive examination. There is a lowering of air conduction on the right at a research by tuning forks (Rinne's test is negative). The patient localize the sound in the right ear at Veber's test.

Control questions to the task 2.

1.) For what disease is typical the complaints on a low frequency noise ("hissing of fat") and a lowering of a hearing from one side?
a.) Otosclerosis;
b.) Acute cochlear neuritis;
c.) Acute exudative middle otitis;
d.) Adhesive otitis;
2.) What pathology can be caused with the symptom of hearing change depending on change of body's position (head) by?
a.) Change of intracranial pressure;
b.) Moving of hearing bones;
c.) Change of cochlea blood filling;
d.) Moving of exudate in a lymphatic cavity;
3.) What reasons, called in anamnesis, can call the indicated changes of hearing?
a.) Having in a virus infection, hemorrhages;
b.) Inflammation of paranasal sinuses of nose;
c.) General overcooling;
d.) Accompanied eustacheitis;
4.) What is the cause of drowning in of patients' tympanic membrane?
a.) Formation of commissures in a tympanic cavity;
b.) Ankylosis of stapes by tympanosclerotic center;
c.) Presence of vacuum in a tympanic cavity;
d.) Inborn changes;
5.)What are the typical tests with a tuning forks for a right-sided middle otitis?
a.) Zhelle's negative test;
b.) Rinne's negative test;
c.) Lateralization of a sound into the left (Veber's test);
d.) Big lowering of perception of C_{2048}
6.) What is the most character audiograms for an exudative middle otitis?
a.)Bone-air break from the both sides to 50-dB, lowering of perception ofC_{2048}
b.)Lowering of air conduction on the right on 30 dB;
c.)Big lowering of osseous conduction on the right at absence of cochlear reserve; left hearing is normal;
d). Bone-air break 25-30 dB from the both sides.
7.) What researches should we do besides audiometry?
a.) Biochemical analysis of the blood and urine;
b.) Allergologic tests;
c.) X-ray research of paranasal sinuses;
d.) A studying of a nasal microflore;
8.) What are the conservative methods of this disease' treatment?
a.)Bathing of tonsillar lacunae ;
b.)Treatment of antibiotics;
c.)UHF and other methods of physiotherapy;
d.)Blowing through the ear by catheter with introducing of hydrocortisone suspension;
9.) What surgical methods are most effective at this disease?
a.) Tonsillectomy at expressed chronic tonsillitis;
b.) Adenotomy at increasing of pharynx tonsil;
c.) Radical operation on maxillary sinus at accompanied antritis;
d.) Submucous nasal septotomy at its deformation, impeded nasal breathing.
10.) What evidences are match to myringotomy and an establishment of shunt in a tympanic cavity with exudative middle otitis?
a.) Accompanied acute purulent antritis;
b.) Chronic allergic rhinosinusopathy;
c) A bending of nasal septum;

d) Adenoids.

Standards of the answers to the task for a self-control (Task No.1):

1– a, c; 2– a, b; 3– a, c; 4– b; 5– lowering of curve of air conduction, bone –air break; 6– b; 7– c; 8– d; 9– c; 10– a.

SENSORINEURAL HEARING LOSS

Neuritis of the vestibulocochlear (auditory) nerve is a collective term implying affection of any part of the auditory apparatus, beginning with the neuroepithelial cells of the spiral organ (the organ of Corti) to the transverse temporal (Heschl's) gyri.

The aetiology of affection of the auditory apparatus is quite varied. . It may be present at birth (congenital) or start later in life (delayed onset or acquired).

Common causes of acquired SNHL include :

1.Infections of labyrinth, viral, bacterial or spirochaetal. Most common causes of the disease are infectious diseases such as influenza, measles, scarlet fever, typhus or malaria.

2.Trauma to labyrinth or VIIIth nerve, e.g. fractures of temporal bone or concussion of labyrinth or ear surgery.

Noise induced hearing loss (acoustic, vibrational, barotrauma)

3.Ototoxic drugs or industrial poisoning. . Degenerative changes in the cells of the organ of hearing prevail in toxic neuritis caused by medicamentous poisoning (streptomycin, monomycin, kanamycin).

4.Presbycusis . 5.Meniere's diease. 6.Acoustic neuroma. 7.Sudden hearing loss (vessel etiology).

8.Familial progressive SNHL. 9. Systemic disorders, e.g. diabetes, cardiovascular pathology, hypothyroidism, kidney disease, autoimmune disorders, multiple sclerosis, blood dyscrasias.

SPECIFIC FORMS OF HEARING LOSS

A. INFLAMMATIONS OF LABYRINTH

It may be viral, bacterial or syphilitic.

1. Viral labyrinthitis**.** Viruses usually reach the inner ear by blood stream affecting stria vascularis and then the endolymph and organ of corti. Measles, mumps and cytomegaloviruses are well documented to cause labyrinthitis. Several other viruses, e.g. rubella, herpes zoster, herpes simplex, influenza and Epstein-Barr are clinically known to cause deafness but direct proof of their invasion of labyrinth is lacking.

2. Bacterial. Bacterial infections reach labyrinth through the middle ear (tympanogenic) or through CSF (meningogenic). Labyrinthitis as a complication of middle earinfection is discussed on page 102. Sensorineural deafness following meningitis is a well known clinical entity.

3. Syphilitic**.** Sensorineural hearing loss is caused both by congenital and acquired syphilis.

B. FAMILIAL PROGRESSIVE SENSORINEURAL HEARING LOSS

It is a genetic disorder in which there is progressive degeneration of the cochlea startingin late childhood or early adult life. Deafness is bilateral with flat or basin-shaped audiogram but an excellent speech discrimination.

C. OTOTOXICITY

*1. Aminoglycoside antibiotics***.** Streptomycin, gentamicin and tobramycin are primarily vestibulotoxic.They selectively destroy type I hair cells of the crista ampullaris but, administered in large doses, can damage the cochlea also.

Neomycin, kanamycin, amikacin, sisomycin and dihydrostreptomycin are cochleotoxic. They cause selective destruction of outer hair cells, starting at the basal coil and progressing onto the apex of cochlea.

Patients particularly at risk are those:

- having impaired renal function,
- elderly people above the age of 65,
- concomitantly receiving other ototoxic drugs,
- who have already received aminoglycoside antibiotics.

Symptoms of ototoxicity — hearing loss, tinnitus and/or giddiness, may manifest during the treatment or after completion of treatment (delayed toxicity).

*2. Diuretics***.** Furosemide and ethacrinic acid are called *loop diuretics* as they block transport of sodium and chloride ions in the ascending loop of Henle. They are known to cause oedema and

cysticchangesinthe stria vascu la ris of the cochlear duct. The effect, in most cases, is reversible but permanent damage may occur.

3. Salicylates. Symptoms ofsalicylate ototoxicity are tinnitus and bilateral sensorineural hearing loss particularly affecting higher frequencies. Site of lesion testing indicates cochlear involvement, but light and electron microscopy have failed to show any morphologic changes in the hair cells. Possibly they interfere at enzymatic level. Hearing loss due to salicylates is reversible after the drug is discontinued.

*4. Quinine***.** Ototoxic symptoms due to quinine are tinnitus and sensorineural hearing loss, both of which arc reversible. The symptoms generally appear wilh prolonged medication but may occur with smaller doses in those who are susceptible. Congenital deafness and hypoplasia of of cochlea have been reported in children whose mothers received this drug during- the first trimester of pregnancy. Ototoxic effects of quinine are due to vasoconstriction in the small vessels of cochlea and stria vascularis.

*5. Chloroquin***.** Effect is similar to that of quinine and permanent deafness can result.

6.Cytotoxic drugs. Nitrogen mustard and cisplatin can cause cochlear damage. They affect the outer hair cells of cochlea.

*7. Miscellaneous***.** Isolated cases of deafness have been reported with erythromycin, ampicillin and chloramphenicol, indomethacin, phenylbutazone, ibuprofen, tetanus antitoxin, propranolol and propylthiouracil.

Alcohol, tobacco and marijuana also cause damage to the inner ear.

*8. Topical ear drops***.** Topical use of drugs in the middle ear can also cause damage to the cochlea by absorption through oval and round windows. Deafness has occurred with the use of chlorhexidine which was used in the preparation of ear canal before surgery or use of eardrops containing aminoglycoside anitbiotics, e.g. neomycin and gentamycin.

D. NOISE TRAUMA

Hearing loss associated with exposure to noise has been well-known in boiler makers, iron- and copper-smiths and artillary men. Lately noise trauma has assumed greater significance because of its being an-occupational hazard, the compensations asked for, and the responsibilities thrust upon the employer and the employee to conserve hearing. Hearing loss caused by excessive noise can be divided into two groups:

*1. Acoustic trauma***.** Permanent damage to hearing can be caused by a single brief exposure to very intense sound, e.g. an explosion, gunfire or a powerful cracker. Noise level in rifle or a gun fire may reach 140-170 dB SPL. Sudden loud sound may damage outer hair cells, disrupt the organ of Corti and rupture the Reissner's membrane. A severe blast may concomitantly rupture tympanic membrane and disrupt ossicular chain.

2. Noise induced hearing loss(NIHL). Hearing loss, in this case, follows chronic exposure to less intense sounds than seen in acoustic trauma and is mainly a hazard of noisy occupations.

F. PRESBYCUSIS

Sensorineural hearing loss associated with physiological aging process in the ear is called presbycusis. It usually manifests at the age of 65 years but may do so early if there is hereditary predispostion, chronic noise exposure or generalised vascular disease.

Patients of presbycusis have great difficulty in hearing in the presence of background noise though they may hear well in quiet surroundings. They may complain of speech being heard but not understood. Recruitment phenomenon is positive and all the sounds suddenly become intolerable when volume is raised. Tinnitus is another bothersome problem and in some the only complaint.

Patients of presbycusis can be helped by a hearing aid. They should also have lessons in speech reading through visual cues. Curtailment of smoking and stimulants like tea and coffee may help to decrease tinnitus.

Symptoms. Vestibulocochlear neuritis is characterized by two main symptoms: permanent noise of varied pitch in the ears due to inflammatory and degenerative process and vascular disorders, and impaired hearing which is characterized by inadequate perception of high-pitch sounds and shortened bone conduction. Less frequently the patients complain of permanent or transient buzzing (ringing) noise in the ears (tinnitus). If neuritis further progresses, impaired hearing can turn into complete deafness.

Complete deafness is a total loss of auditory sensitivity. A rapidly progressing hearing loss is often attended by symptoms of irritation of the vestibular apparatus; these are, first of all, vomiting, vertigo, and absence of the sense of balance. A spontaneous nystagmus can develop.

Diagnosis. A thoroughly collected anamnesis and also clinical findings are important for diagnosis of vestibulocochlear neuritis. Tuning-fork and audiometric tests are of leading importance in topical diagnosis.

Hearing disorders associated with neuritis should be differentiated from perceptive disorders due to brain tumour, haemorrhage into the internal ear, and some other affections. The main differentiating sign of vestibulocochlear neuritis is bilateral deafness or amblya-cousia.

Characteristics of sensorinural hearing loss are :

1. A positive Rinne test, i.e. air conduction better than bone conduction.
2. Weber lateralised to better ear.
3. Bone conduction reduced on Schwabach and absolute bone conduction tests.
4. More often involves high frequencies.
5. No gap between air and bone conduction curve on audiometry
6. Loss may exceed 60 dB.
7. Speech discrimination is poor.

Treatment of infectious neuritis should be aimed at elimination and neutralization of causes of the disease. Therapeutic measures should therefore be immediately taken. We should prescribe the most rational treatment, which is able to remove the consequences of actions on to the internal ear. All the remedies are effective only in the first few weeks from the beginning of the disease before degenerative changes in the cochlea. That's why patients with acute hardness of hearing need in urgent hospitalization. It is necessary to make intensive therapy too. A doctor prescribes to these patients a confinement to bed, a limit of salt and a liquid food, sedative remedies and active etiotropic treatment.

The therapy of infectious neuritis includes mainly measures aimed at elimination of inflammation and eradication of the routes of infection ingress. The bed rest and antibiotics should be administered. Steriod therapy. Pednisone 60 inflammatory and relieve oedema. They have been found useful in SHL of moderate degree. Inhalation of carbogen (5% CO_2 + 95% 0_2*)*. It increases cochlear blood flow and improves oxygenation. Vasodilator drugs. Low molecular weight dextran (hemodes, neohemodes, neogluman etc.). It decreases blood viscosity. It is contraindicated in cardiac failure and bleeding disorders.

Indicated also is stimulation therapy: aloe, 1 ml a day, 25-30 injections and subcutaneous injections of a corpus vitreum preparation, 2 ml, 20 injections for a course. Vitamins C and B are necessary to treat vestibulocochlear neuritis of any aetiology. Intravenous injections of a 20 per cent glucose solutionare also effective. Infectious neuritis should also be treated by physical methods. Most effective of them are electrophoresis of a 5 per cent potassium iodide solution on the mastoid process (15 sessions) and d'Arsonvale current. Ringing and buzzing noise (tinnitus) in the ear can be decreased by intracutaneous novocain block (1 per cent novocain solution is injected intracutaneously into the external acoustic meatus in a dose of 0.5 ml, 1-1.5 cm from the entrance to the meatus). The course includes 12 injections.

Treatment of toxic neuritis first of all includes prevention of further ingress of toxins into the body and their immediate withdrawal from the body.

Diuretics and sudorifics should be given. In cases with acute streptomycin intoxication unithiol should immediately be administered in combination with vitamins B group. Unithiol should be injected intramuscularly or subcutaneously, 1 ml of a 5 per cent solution per 10 kg body weight of the patient. During the first day unithiol is administered 3-4 times; during the second day, 2-3 times; and during the next seven days, 1-2 times a day.

Rp.: Sol. Unithioli 5%, 5.0

D. t. d. N.10 in amp.

S. Subcutaneous injections of 5 ml 3-4 times a day

Good effect is attained with cocarboxylase, 50 mg daily, during 30 days, in combination with apilac (a tablet for sublingual intake contains 0.01 g of the preparation; the tablets should be taken 3 times a day after meals, for 30 days). The metabolic processes in the nerve tissue can be improved by

intramuscular injections of ATP (adenosinetriphosphoric acid) in a dose of 1-2 ml of a 1 per cent solution for a month.

When a lowering of a hearing develops slowly and because of a breach of vascular nutrition of internal ear, doctors usually prescribe a complex of medicines, that consists of a spasmolytic and vascular broadening remedies (sturgeon, cinnarizine), nicotinamide, complamine, no-spa, cavinton, otoneurine); remedies, promoting a dissolution of atherosclerotic congestions (prodectin); remedies, rising a flow of erythrocytar mass through the narrow capillaries (Trental etc.). In some cases there is an effect of a treatment of vertebrobasilar insufficiency, appearing because of cervical osteochondrosis.

In some patients acupuncture is an effective means to reduce (or remove) noise in the ear.

Prognosis. Fortunately about half the patients of idiopathic sensorineural hearing loss recover spontaneously within 15 days. Chances of recovery are poor after 1 month. Severe hearing loss and that associated with vertigo have poor prognosis. Younger patients below 40 and those with moderate losses have better prognosis.

MENIERE'S DISEASE

This is a non-suppurative disease of the inner ear characterized by the classical triad: (1) attacks of systemic labyrinthine vertigo attended with nausea and vomiting; (2) unilateral hearing loss; (3) noise in the involved ear. The disease was first described by Prosper Meniere, a French physician, in 1861.

Attacks of vertigo occur amid complete health and are attended by nausea and sometimes vomiting. As a rule, noise in the affected ear intensifies during an attack. The patient feels as if his ear is stuffed or he is deafened. The objective sign of an attack is spontaneous nystagmus which disappears soon after the attack is abated. The patient loses his sense of balance during attacks and tries to assume a horizontal position, often with his eyes closed. Any attempt to change the position impairs the patient's condition and intensifies nausea and vomiting. Attacks can occur at any time of the day, but mostly at night time or in the morning. A physical or psychic overstrain can be the provoking factors. Some patients feel the approaching attack a few hours or even days before the actual onset of the disease. Noise in the ear or slight loss of balance are precursors of the forthcoming attack.

Fluctuation of hearing is a leading diagnostic sign of the auditory disorder: the hearing can improve considerably between attacks against the background of a gradually progressing deafness. During the initial stage of the disease, the hearing function can be restored completely thus indicating the absence of organic changes in the vestibulocochlear nerve during this period.

Meniere's disease occurs mostly in the young. Its onset is characterized by the noise in the ear which is followed (in a few hours or years) by attacks of systemic vertigo and vegetative disorders. An important point is that the auditory, rather than vestibular, disorders are typical for the onset of the disease. When establishing a diagnosis, it is necessary to take into account the periodicity of attacks, their short duration, good subjective condition of the patient during remission, etc.

The disease should first of all be differentiated from the vascular and vestibular syndrome, arachnoiditis, and tumour of the cerebellopontine angle.

Variants of Meniere's disease

Cochlear hydrops. Here only the cochlear symptoms and signs of Meniere's disease are present. Vertigo is absent. It is only after several years that vertigo will make its appearance.

Vestibular hydrops. Patient gets typical attacks of episodic vertigo while cochlear functions remain normal. It is only with time that a typical picture of Meniere's disease will develop.

Lermoyez syndrome. Here symptoms of Meniere's disease are in reverse order. First there is progressive deterioration of hearing followed by an attack of vertigo, at which time the hearing recovers.

Secondary Meniere's disease

Endolymphatic hydrops with clinical picture resembling Meniere's disease has been observed in congenital or acquired syphilis, otosclerosis, Paget's disease and post-stapedectomy cases.

Treatment. The polyaetiological origin of the disease accounts for the multitude of methods of treating it.

Methods causing reconstruction of the vegetative nervous system are widely used. These are as follows:

(1) reflex action of novocain block (intranasal block, the block of the stellate ganglion and the cervical sympathetic trunk);

(2) vitaminB, PP**,** A, and E therapy;

(3) oxygen therapy and habituation (training with controlled increasing strength of rotation);

(4) exposure of the diencephalon (the centre of the vegetative nervous system) and the sympathetic cervical ganglia to X-rays.

Surgical methods of treatment have been widely used in the recent decade (the operation for decompression of endolymphatic sac).

An acute attack of vertigo is eliminated by subcutaneous injection of 1 ml of a 0.1 per cent atropine sulphate solution, intravenous administration of 10 ml of novocain solution and 10 ml of a 40 per cent glucose solution. If this measure is not sufficient, 1-2 ml of a 2.5 per cent aminazine solution should be injected intramuscularly. If the attack fails to be removed completely, administration of atropine, aminazine and novocain should be repeated in 3-4 hours. If vertigo is severe and the mentioned means prove insufficiently effective, 1 ml of a 1 per cent pantopon solution can be administered subcutaneously.

The presence of arterial hypotension rules out the use of aminazine.

Antihistaminics, chloropyramine, and diphenhydramine hydrochloride are effective both during and after the attack. One of these preparations is administered in a common dose subcutaneously.

It is recommended to carry out a course of intravenous injections of a 5 per cent sodium bicarbonate solution, 50 ml a day, for 15-30 days. Positive effect is attained with dehydration: salt intake should be restricted to 0.5 g a day; ammonium chloride should be taken in 3-day courses (3 g, 3 times a day), 2 or 3 courses at 3-4-day intervals.

Surgical treatment

It is used only when medical treatment fails.

1. Conservativeprocedures. They are used in cases when vertigo is disabling hut hearing is still useful and needs to be preserved. They are :

Decompression of endolymphatic sac.

Endolymplwtic shunt operation. A tube is put connecting endolymphatic sac wilh subarachnoid space to drain excess endolymph.

Succulolomy. It is puncturing the saccule with a needle through stapes

footplate. A distended saccule lies close to stapes footplate.

Section of vestibular nerve. The nerve is exposed by middle cranial fossa approach and seieclively sectioned. It controls vertigo hut preserves hearing.

Ultrasonic destruction of vestibular labyrinth. Cochlear function is preserved. 2.Destructive procedures. They totally destroy cochlear and vestibular function and are thus used only when cochlear function is not serviceable.

Labyrinthectomy. Membranous labyrinth is completely destroyed either by opening lateral semicircular canal or through the oval windows.

Patients with Meniere's disease should abstain from work with moving mechanisms or in conditions of vibration and noise exceeding 70 dB. Work at high altitudes is also prohibited.

OTOSCLEROSIS

Otosclerosis is a frequent cause of deafness (it occurs in more than 0.5 per cent of cases). The morphological substrate of otosclerosis is a circumscribed osteodystrophic process manifested by small single foci of newgrowths in the bony walls of the right and left labyrinths. These foci are relatively symmetric in the bony capsules of the internal ear. They grow to replace gradually the wall of the labyrinthine capsule by a spongioid or dense bone with a different structure. In most cases the otosclerotic focus is localized anteriorly to the oval window; as it grows, the focus extends to the stapedovestibular junction, the anterior limb of the stapes, which impairs mobility of the stapes thus affecting the hearing function and causing noise in the ear. Hearing is first impaired in one ear; then, following months or years, the other ear is involved. This form of otosclerosis is called clinical. If otosclerotic foci are localized outside the windows of the labyrinth, the form is called histological; it can only be detected during histological examination of pathological material. Otosclerosis is usually

associated with dystrophic changes in all tissues of the temporal bones. There are tympanic, cochlear and mixed form of this diseases. Otosclerosis occurs mostly in women (in 80-85 per cent of cases).In 70 per cent of cases the disease begins at the age from 20 to 40. Otosclerosis is a hereditary disorder. Various intrinsic and environmental factors can also be important for the onset and the course of the disease. The main audiological sign of otosclerosis is considerably increasing thresholds of air conduction in both ears. Bone conduction thresholds usually increase to a considerably smaller extent. The Willis paracousis symptom is pathognomonic for otosclerosis : the patient hears much better in noisy surroundings (e. g. in traffic, or airplane). This phenomenon can presumably be explained by mobilization of the stapes with strong low-frequency vibrations and jolting, on the condition that the stapes is only moderately fixed in the oval window. Ultrasound testing (98 000 Hz) of the hearing function is important for differential diagnosis of otosclerosis and cochlear neuritis. In otosclerosis ultrasound is perceived at the same intensity as in health, or the intensity can be increased only slightly, while in cochlear neuritis the sound intensity should be increased two or three times compared with the norm.

Treatment of otosclerosis is surgical. It is actually symptomatic because it does not eliminate the pathogenic factors of the disease and only removes to a lesser or greater extent the symptom-deafness and tinnitus. The operation is aimed at reconstruction of the sound transmission system, from the ossicles to the perilymph. The mobility of the base of the stapes in the oval window is impaired due to the growth of the otosclerotic focus into the annular ligament and the base of the stapes (usually at its anterior pole).

The following operations aimed at improving the hearing function are now widely used: Stapedoplasty with partial or complete stapedectomy, and Stapedoplasty by a piston method.

At a late-term postoperative period 80 per cent of the operated patients preserve socially adequate hearing, which is an evidence of the high efficacy of surgical treatment of otosclerosis. But operations on the oval window are fraught with great danger to the function of the internal ear, both in the early and late postoperative periods. The operation is therefore performed usually on one ear only. If the hearing function of the operated ear is completely lost, the non-operated ear can be assisted by a hearing aid.

Chronic Catarrh of the Middle Ear

Chronic catarrhal otitis media is produced by various morbid processes in the nose and nasopharynx which spread up the Eustachian tube and serve to narrow its lumen thereby obstructing ventilation of the middle ear. Repeated acute catarrhs of the middle ear gradually thicken its mucosa and make the drum less elastic. A long-standing obstruction of the Eustachian tube gradually leads to a noticeable and stubborn retraction of the drum followed by ankylosis of the ossicular chain. Frequently lengthwise and crosswise fibres of scar tissue form between the drum and the walls of the tympanic cavity. This condition is known as chronic or adhesive catarrh. The patient complains of progressive deafness and tinnitus. It often happens that the hearing improves at times, particularly in dry weather, and deteriorates when the weather is damp, and in coryza.

Diagnosis. The diagnosis of this condition rests on examination of the drum and functional examination of hearing. The drum is more or less markedly indrawn, dull and sometimes creamy-white in colour. Sharply outlined white spots of variable form are often observed, which are calcareous deposits in the depth of drum tissue. Scars left by suppurative otitis, as well as atrophic areas of the drum appear to be dark and are often mistaken for drum perforations. In atrophy the drum closely adheres to the internal wall of the middle ear, which sometimes creates the impression of complete absence of the drum.

The extent of changes in the drum has no decisive bearing on the degree of hearing. Therefore, the diagnosis should be p. verified by an assessment of the hearing and in many cases by a trial inflation of the auditory tube. The most typical results will be produced by tuning-fork tests where a nearly normal hearing for high tones produced by a C 2048 tuning fork is accompanied by a severe low-tone loss as evidenced by the use of a C 128 tuning fork. Bone conduction is often lengthened.

Trial inflation of the tube often improves the hearing immediately.

Prognosis. This is favourable if the disease is of short duration, and the hearing has markedly improved after tubal inflation.

Treatment. The first task is to restore the patency of the Eustachian tube, that is, to eliminate the morbid condition in the nose and nasopharynx. Ade-noidectomy is a frequent procedure in such cases, particularly in children, while operations on adults are mostly performed for deformities of the nasal septum, for removal of hypertrophic posterior ends of the lower nasal conchae, etc. Sometimes, these measures alone are sufficient to remove the tubal obstruction and largely restore the hearing. But should elimination of the nasal disease fail to produce a lasting improvement of hearing, tubal inflation will be required.

Tubal inflation is carried out by means of a rubber bulb through an olive-shaped composition tip or an aural catheter. The first procedure is based on the fact that in swallowing and pronouncing some consonants and vowels the soft palate rises and fully closes the entrance to the nasopharynx. By pressing on the bulb at this moment the air in the nasal cavities will be compressed and pushed into both Eustachian tubes. Inflation is performed by introducing a composition tip into one of the nostrils which are pinched simultaneously with fingers of the left hand. The patient is directed to take a little water into his mouth and swallow it at the count of three. At this moment the bulb is compressed, and a blast of air penetrates into the Eustachian tubes with a characteristic noise.

Tubal inflation may also be performed without the use of water. The patient is directed to call out numbers, and at the count of three an air blast from the bulb is blown into the ear. To check whether inflation has been successful an otoscope is used. In cases where a rubber bulb and composition tip are inadequate equipment for inflation to be properly performed, or if unilateral inflation has to be made, the tube will be inflated through a catheter following a short nasal anesthesia, if necessary. An aural catheter is a slender 15 to 17 cm long metal tube curved like a beak at one end funnel-shaped at the other, basal end. At the base of the catheter, there is a small ring set on edge in the same plane as the beak. Prior to use, the catheter should be sterilized in boiling water. After the catheter has been slipped in along the nasal floor down to the nasopharynx with its beak pointing downwards, the latter is turned to the middle, and the catheter is gently pulled back until the beak has touched the back edge of the vomer. Here, on the lateral wall of the nasopharynx, is the mouth of the Eustachian tube. By turning the beak 180 degrees outwards it is slipped into the mouth of the Eustachian tube. This is followed by inflation . The catheter should be introduced with gentle caution and without any pressure. The beak curvature may be altered, if necessary.

When air is blown through the catheter, characteristic sounds may be heard through the otoscope. These may vary according to the patency of the Eustachian tube and its possible mucous contents. A soft blowing sound indicates a patent tube, louder high-pitched sounds are a sign of tubal obstruction, and, finally, the presence of exudate causes characteristic bubbling sounds. Careless insertion of the catheter may injure the mucous membrane and produce nasal bleeding. The blowing of air into torn tissues may cause emphysema.

In severe atrophy of the drum, inflation should be made with great care and sometimes be abandoned for fear of rupturing the drum.

Inflation may improve the hearing for several hours to a few days. Therefore, repeated inflations have to be made every one, two or three days, sometimes up to 5, 10 and 15 times in all. The nasopharynx is simultaneously painted with 1% silver nitrate solution or 0.25% Lugol's solution. In advanced cases, various kinds of thermic procedures, diathermy and mudtherapy are used to resolve commissures and increase flexibility of the ossicles, which unquestionably aid recovery. A pneumatic massage of the drum can also be used in combination with inflation. If a special apparatus is not available, the massage can be made by means of a pneumatic speculum tightly pressed into the auditory canal and compressed with moderate effort up to 60-100 times a minute to produce alternate suction and pressure on the drum membrane. This will make the drum move in and out and set in motion the entire ossicular chain. In recent time, injections of aloe preparations and skin grafting by Filatov's method have been used with favourable results.

Prophylaxis. The best way to avert middle ear catarrh is to ensure normal nasal breathing. The earliest possible treatment of acute catarrh of the upper respiratory tract and timely management of chronic diseases of the nose and nasopharynx will no doubt serve to keep down the rate of severe deafness.

Prophylaxis of amblyacousia (dull hearing) in pre-school and school children demands the utmost attention. Periodical examination of all children of this age always reveals those who are in

need of some treatment. The presence of adenoids severely affects the hearing and their timely removal will undoubtedly prevent hearing loss in quite a number of cases.

Table 1. The most frequent distinctive signs of a cochlear neuritis and a diseases of a middle ear.

Anamnesis	Cochlear neuritis	Exudative middle otitis	Otosclerosis
1.Hereditary diathesis	Sometimes – inborn deafness	Absence	Presense of a hardness of hearing at a near relations
2. The main reason of the disease	Infectional diseases, vascular diseases and intoxications, including by antibiotics	The diseases of the nose, pernasal sinuses; inflammation of auditory tube. Tumors in epipharynx.	Unknown. Disease usually progresses after pregnancy and birth.
3. The peculiarities of disease's current.	Sudden or gradual lowering of the hearing accompanied by sensation of noise and sometimes – giddiness.	Clicking in the ears at deglutition, the sensation of the noise is unnecessary. The lowering of the hearing has inconstant character.	The sensation of the noise in the ears; slow lowering of the hearing.
4. The character of noise	High frequency (ringing, whistle).	Mostly absent	Low frequency (A noise of wind, rustle of leaves etc.)

1. An acute or gradual lowering of the hearing, accompanied by the high-frequent noise and sometimes giddiness are character features of cochlear neuritis. Vascular diseases and intoxications are on the base of pathology most frequently. The vascular diseases are: thrombosis and embolism, hemorrhages near internal auditory artery; the intoxications by antibiotics of aminoglycosid's group; the infectional diseases are influence, parotitis, typhus, syphilis.
2. Transient changes of the hearing (frequently on a one side) are character for an excudative middle otitis. There is a clear dependence on a condition of respiratory tractus. There is a change of a hearing at change of a head's position (because of moving of exudate) or relatively strong hardness of a hearing on the last stage of the disease because of formation of commisures in tympanic cavity (adhesive otitis).
3. Otosclerosis is characterized with slowly growth of hardness of hearing, accompanied by a sensation of low-frequency noise. The disease begins gradually, but its push is pregnancy. The hardness of hearing often can be hereditary. An unusual symptom is a character-paracusis Willisii, when a patient hears better in noise.

The research of external patient's condition and a results of otoscopy can give also additional facts for a differential diagnosis (Table 2).

The facts of complains, anamnesis, a results of objective research of a patient allow to suppose a breach of a sound conducting, diseases of a cochlea or a central part of auditory analyser. This question is determined with tuning folks in our patient's clinical picture (*Table 2*)

Table 2.

Tuning fork's tests	Otosclerosis, exudative otitis	Cochlear neuritis
Tuning fork 128 Hz Rinne's experimentation of air and osseous conduction Veber's experimentation of	Negative. A patient hears better through the bone of mammiform processes then	Positive. Perception of tuning fork is low through the air and bone.

the sound at a position of the sounding tuning fork at the middle of a crown. Shvabach's experiment – tuning fork's position is on the mammiform processes. Zhelle's experiment – degree of perception of a sound through the bone of mammiform processes at a change of the pressure in acoustic duct with the help of Zugle's funnel	by the air. In the side of injured ear, at a breach of a sound conduction from both sides – in a side of less hearing ear. There is no changes. Variations of pressure in acoustic duct because of stirrup's ankylosis ain't reflect on perception of tuning fork's sound through the bone.	 In a side of a health ear. Perception of tuning fork's sound is shortened through mammiform processes. The tuning fork's sound will be percepted better or less at change of a pressure in acoustic duct.
Tuning fork 512 Hz Federiche's experiment – comparison of perception of tuning fork's sound which is on tragus and bone of mammiform processes	Negative. A patient hears better the sound from a mammiform processes.	Positive. A patient hears better the sound from tragus
Tuning fork 2048 Hz 6.) Perception of tuning fork's sound through the air.	It isn't lowered or lowers unimportanly	It lowers considerably.

***Table 3.*Distinctive signs of patient's with otosclerosis, exudative otitis, cochlear neuritis.**

Symptoms	Cochlear neuritis	Exudative otitis	Otosclerosis
1. Color of sclerae	Normal	Normal	Can be blue
2. Amount of ear-wax in acoustic duct	Normal	Normal	Usually there is no ear-wax in acoustic duct
3. A state of tympanic membrane	Normal	Membrane is drawn in; you can see air's bubbles or a level of exudate, which changes depending on head position.	Normal. Sometimes it is partly thin, pink spot appears through (promontory).

The Hearing loss and Deaf

Children with profound or total deafness fail to develop speech and have often been termed as *deaf-mute* or *deaf and dumb.* However these children have no defect in their speech producing apparatus. The main defect is deafness. They never heard speech and therefore do not develop it. Lesser degrees of hearing loss result in defective speech. The period from birth to 5 years of life is critical for the i development of speech and language. Therefore, there is need for early identification and assessment of hearing loss.

Finding the cause

This may require a detailed history of prenatal, perinatal or postnatal causes, family history, physical examination and certain investigations depending on the cause suspected.

Suspicion of hearing loss. Hearing loss is suspected if the child sleeps through loud noises unperturbed or fails to startle to loud sounds, fails to develop speech at 1-2 years. A partially hearing child may have a defective speech and perform poorly in school and be labelled as mentally-retarded. It is essential that all children *at risk* for hearing loss should be screened. Factors which put the child at risk are:

1. Family history of hearing loss.
2. Prenatal infections or use of ototoxic drugs.
3. Birth weight less than 1500 g.
4. Child with stigmata ofsyndromal deafness (deformed pinna, cleft palate, cranio-facial deformities, etc.)
5. Bilirubin level exceeding 20 mg%.
6. Meningitis, especially due to Haemophilus influenzae.
7. Severe asphyxia with seizures or coma in neonatal period.

Testing for hearing loss. Assessment of auditory function in neonates, infants and children demands special techniques. They are grouped under following heads:

Behaviour observation audiometry. Auditory signal presented to an infant produces a change in his behaviour, e.g. alerting, cessation of activity, widening of eyes or facial grimacing. *Moro's reflex* is one of them and consists of sudden movement of limbs and extension of head in response to sound of 80-90 dB. In *cudileo-palpebralreflex,* the child responds by a blink to a loud sound. *Incessation reflex,* an infant stops activity or crying in response to a sound of90dB.

A newborn screening device is the *auditory response cradle* where baby is placed in a cradle and his behaviour responses (trunk and limb movement, head jerk and respiration) in response to auditory stimulation are monitored by transducers. It can screen babies with moderate, severe or profound deafness.

Play audiometry (conditioning techniques). The child is conditioned to perform an act (place marble in a box, block in the bucket, ring on a post, etc.) when he hears a sound. It can be done in free-field or using headphones. It is possible to get a frequency-specific audiogram in children 2-4 years of age.

Visual response audiometry is similar to distraction technique. The child is conditioned to turn his head to the direction of sound which is also reinforced by a light. The head turns are then noted in response to sound stimuli.

Objective audiometry. It includes :

Electrocochleography. It can measure auditory sensitivity to within 20 dB. But it is an invasive procedure.

Auditory brain stem response. It is an electro-physiological test and measures sensitivity in the range of 1000-4000 Hz.

Impedance audiometry. Stapedius muscle contracts reflexly in response to a sound of70-100dB HLand this reflex can be recorded. Elevated intensity levels indicate middle ear or sensorineural hearing loss. Tympanometry can also detect and differentiate causes of conductive deafness.

MANAGEMENT

It is essential to know the degree and type of hearing loss and other associated handicaps such as blindness or mental retardation and whether hearing loss is prelingual (before development of speech) or post-lingual. Aetiology of hearing loss remains obscure in about half the cases.

Aims of habilitation of any hearing-impaired child are to develop speech and language, adjustment in society and useful employment in a vocation.

1. Parental guidance. It is a great emotional shock for parents to learn of their child being deaf. They should be dealt sympathetically so as to accept the child. They should be told of child's disability and how to care for it. Habilitation of the deaf demands a lot from parents : care and periodic replacements of hearing aids, change of ear moulds as child grows, follow up visits for re-evaluation, education at home and selection of vocation.

2. Hearing aids. Most deaf-children have a small but useful portion of residual hearing which can be exploited by amplification of sound. Hearing aids should be prescribed as early as possible. Ifnecessarybinaural aids, one for each ear, can be used. Hearing aids help to develop lip-reading.

3. Development of speech and language

4. Education of the deaf. There are residential and day schools for the deaf. Some children with moderate hearing loss can be integrated into schools for the normal children with preferential seating in the class.

5. Vocational guidance. The deaf are sincere and good workers. Given the opportunity, commensurate with their ability, they can be usefully employed in several vocations.

Types of hearing aids

Air conduction hearing aid. In this, the amplified sound is transmitted via the ear canal to the tympanic membrane.

Bone conduction hearing aid. Instead of a receiver, it has a bone vibrator which snugly fits on the mastoid and directly stimulates the cochlea. This type of aid is specially useful in persons with actively draining ears, cases with otitis extema or atresia of the ear canal when ear-inserts cannot be worn.

Most of the aids are air conduction type. They can be:

1. Body-worn type. Most common type; microphone and amplifier along with battery are in one case worn at the chest level while receiver is a long distance away at ear level.
2. Behind-the-ear type. Here microphone, amplifier, receiver and battery are all in one unit which is worn behind-the-ear.
3. Spectacle type. It is a modification of the "Behind-the-eartype" and the unit is housed in the auricular part of spectacle frame.
4. In-the-ear type. The entire hearing aid is housed in an ear mould which can be worn in the ear. It is useful for mild to moderate hearing losses with flat configuration. Because of the cosmetic appeal they are very popular.

5. Canal type/This hearing aid is so small that the entire aid can be worn in the ear canal without projecting into the concha.

Indications for hearing aid

Any individual who has a hearing problem that cannot be helped by medical or surgical means is a candidate for hearing aid.

1. Sensorineural hearing loss which interferes with day to day activities of a person. Hearing aid may not suit all such persons because of the intolerable distortion of sound in some.

2. Deaf children should be fitted with hearing aid as early as possible for development of speech and learning. In the severely deaf children binaural aids (one for each ear and individually fitted) are more useful. Training in lip reading is given simultaneouly.

3. Conductive deafness. Most of such persons can be helped by surgery but hearing aid is prescribed when surgery is refused or not feasible or has failed.

COCHLEAR IMPLANTS

Cochlear implants have been developed recently and are still in their developmental phase. They are electronic devices which convert sound signals into electrical impulses which thendirectly stimulate the cochlearnerve. Thus they replace the non-functional transducer system of hair cells of the cochlea.

A cochlear implant consists essentially of three components: (a) a *microphone* which picks up the acoustic signals from the environment ,(b) a *speech processor* which converts sound signals into electrical energy.and (c) an *electrode* which stimulates the cochlear nerve. The speech processor and the electrode are connected together by a wire or through an induction coil system. The electrode which stimulates the nerve is either placed in contact with the promontory (extracochlear), inside the scala tympani (intracochlear) or in the cochlear nerve (intraneural). Further the electrode may be single channel or multiple channel.

Surgery for implantation. Placement of electrode on the promontory, in the scala tympani or cochlear nerve in the modiolus would require surgery of the ear. Currently the most widely used approach is cortical mastoidectomy with access to the round window and promontory through the facial recess. Electrode is also anchored to the mastoid cortex through a suture to prevent displacement. At some

centres (Paris model) radical mastoidectomy is performed to expose the cochlea so that electrodes can be implanted in different coils of the cochlea.

Selection of patients

Cochlear implants are more useful in postlingually deaf patients, i.e. those who lost their hearing after acquisition of language. Congenitally deaf patients have not been benefitted as effectively. Criteria for selection of patients for cochlear implant are:

1. Bilateral deafness with average hearing threshold of 95 dB for speech frequencies of 500,1000 and 2000 Hz.
2. Inability to benefit from a hearing aid. All candidates for cochlear implant must undergo a trial of bearing aid.
3. Sound mental and physical health.
4. Motivation and patience on the part of the patient to undergo subsequent rehabilitation programme.

Current status of implants

Multiple channel implants have been found more useful than single channel implants. Postlingually deaf patients are benefited most. Some will develop the ability to understand speech without lip-reading while others enhance their ability to lip-read because of the useful cues. In the prelingually deaf, some benefit is claimed to adults and teenagers but not to the children.

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Practical lesson 9

Topic: ***Acute and chronic diseases of paranasal sinuses.***

Reason: Study of inflammatory diseases of paranasal sinuses of nose keep serious importance. This not only explains the relative frequency of pathology in question, but often occurring serious period of such inflammation is especial in early child's period. Apart from this according to the anatomo-topographic location of these sinuses and functional conditions depending on the age, these inflammation can threaten to vital organ, initialing intraorbital and intracranial problems. Treatment of such patients is done by ENT.

Knowledge of this section in practice is necessary for ENT, neuropathologist, neurosurgeon, ophthalmologist, pediatrician, PES (personnel of emergency service) and this can also be used by students for studying neural, pediatrics, optical diseases and neurosurgery material.

Aim of the lesson: The student *should know* about:

1. Etiology and pathology of acute and chronic sinusitis.
2. Classification of chronic sinusitis.
3. Clinics, basis of disease treatment.
4. Additional analysis and diagnostic directives: (X-ray, puncture of maxillary sinus etc).

Student *can do*:

1. Collect anamnesis of diseases.
2. Make endoscopical methods of examination of the nose and nasopharynx.
3. Analyses X-ray, tomogram of paranasal sinuses.
4. Prepare nasal cotton probe.
5. Carry out toilet and ointment application of nasal meats.

Equipment: tables, dummies, simulators, multimedia presentations, video films, tool sets, tuning forks, tomograms, radiographs, etc.

Plan

№№	The name of the composition of the class	Hour
I.	Organizational moment (greetings, checking those present, announcing the topic, the purpose of the lesson, motivating students to study the topic).	7
II.	Control of supporting topics.	38
2.1	Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units).	8
2.2	Questions (test tasks, problems, clinical situations) to check basic knowledge on the subject of the lesson.	30
III.	Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.).	40
3.1	Content of tasks (tasks, clinical situations, etc.).	20
3.2	Recommendations (instructions) for performing tasks (professional algorithms, orienting maps for the formation of practical skills and abilities, etc.).	3
3.3	Requirements for work results, including to registration	2
3.4	Control materials for the final stage of the lesson: problems, tasks, tests, etc. (if necessary).	15
IV.	Summing up.	5

Task for self-preparing:

For realization of aim, basic knowledge are necessary:

- anatomo- topographic interrelation of sinuses and neighboring organs,
- clinical anatomy of nasal sinuses and their physiological functions.

Task for self-analysis for the basic knowledge preparation:

1.Which nasal aperture is recommended for cateterization of maxillary sinus?

a) through inferior nasal meats.

b) via middle nasal meats under the anterior end of medial conch.

c) via middle nasal meats in middle part of the conch

d) via superior nasal meats

2. Which of the sinuses participate in the formation of orbital wall:

a); b); c)

3.Which of the nasal sinuses participate in the formation of anterior cranial fosse?

a); b)

4.Select, which of the denoted sinuses (a-b) open up in:

1) Middle nasal meats
2) Superior nasal meats
a) frontal sinus, maxillary, frontal and medial cells of ethmoidal labyrinth.
b) Posterior cells of ethmoidal labyrinth, sphenoidal sinus.

5. Which of the sinus may be absent in adults?

a) frontal
b) sphenoidal
c) maxillary

6. In which of the sinuses inflammation the pus is collected in the posterior region of nasal cavity, nasopharynx?

7. Why does the puncture of the sinus maxillaries do through nasal cavity for confirming diagnosis?

8. Why do the patients suffering from sphenoiditis have poor visions?

9. Infant, having purulent acute ethmoiditis have bulging in the medial corner of orbit, limiting the movement of eyeball. Why?

Answers of the task:

1.B; 2.a) inferior wall of frontal sinus. b)lateral wall of ethmoidal labyrinth. c)superior wall of maxillary sinus; 3. a)posterior wall of frontal sinus; b)lamina cribrosa of the ethmoidal labyrinth; 4.1-a, 2-b; 5.a 6.Inflammation of sphenoidal sinus and posterior cell of ethmoidal labyrinth. 7.Lateral wall in the region of meats nasals inferior and medial and inferior part of medial nasal conches formed by medial wall of sinus maxillaries. 8. On the upper wall of sphenoidal sinus lies the crossings of orbital nerve. 9.Ethmoidal labyrinth is separated from orbital tissues by their bone plate – lamina papiracea. Purulent ethmoiditis cause purulent process in the orbital region.

Inflammatory diseases of paranasal sinuses

Acute and chronic inflammatory diseases of the paranasal sinuses are frequent. They make 25-30 per cent of the hospitalized patients with diseases of the ear, nose and throat.Maxillary sinusitis stands the first in the list of incidence. Next comesethmoiditis, then frontitis and finally sphenoiditis_ Sometimes all paranasal sinuses are affected (pansinusitis) or the sinuses of one side (hemisinusitis).

Acute inflammation of the sinuses is caused by acute respiratory diseases, influenza, common cold, general microbial infections, and injuries Chronic sinusitis can be secondary to protracted or frequently recurring acute diseases in the presence of various local and general harmful factors such as decreased reactivity and general weakening of the body, impaired drainage of the sinuses in the presence of hypertrophy or polyps of the mucosa in the region of the orifices, deviated septum, and diseases of the teeth. The suppurative forms of the disease are usually caused by streptococci and staphylococci or other micro-organisms.

Classification of sinusitis:

1.Acute sinusitis: a)catarrhal; b) suppurative.

2.Chronic sinusitis: a) exudative (catarrhal, serous, suppurative, vasomotor, allergic) b) polipous; c) polipous-purulent; d) hypertrophy; e) atrophy (cholesteatomal, caseous, necrotic, ozaenous)

Acute maxillary sinusitis. Signs of acute inflammation of the maxillary sinuses can be local and general. The local symptoms are pain in the region of the involved sinus, forehead root of the nose, and the cheek bone. Headache can be diffuse. Impeded respiration through the involved side of the

nose is a common symptom. Nasal discharge is usually unilateral, and is first liquid serous, but then it becomes cloudy, tenacious, and purulent. Olfaction is affected as a rule, but the severity of other symptoms masks this disorder. The general symptoms are elevated temperature of the body, indisposition. The temperature reaction can begin with a chill and be intensive during the entire disease.

The objective symptom of acute maxillary sinusitis is a narrow strip of purulent discharge from the maxillary sinus into the middle nasal meatus, which is especially evident if the head is inclined to the opposite side. Some additional examinations should be earned out: X-ray examination of the paranasal sinuses, diagnostic antral puncture and irrigation of the maxillary sinus; contrast X-ray and echography, and some other techniques can also be used.

The Kulikovsky needle is commonly used for antral puncture. The sinus wall is punctured by the needle and the sinus contents are aspirated; then, the sinus is irrigated with a disinfectant solution, e.g. furacillin. The liquid is passed into the sinus through the needle, while the sinus is drained through the natural orifice. The patient leans downward so that the washings are withdrawn through the nose without entering the nasopharynx. The presence of pathological contents in the sinus is a direct indication of the specific pathology; the absence of pathological matter in the washings does not exclude completely the disease of the sinus. A radiopaque substance (iodolipol) should then be injected into the sinus and an X-ray picture taken in two projections.

Treatment includes local use of vasoconstrictors drops, physiotherapy, and general antibacterial therapy in the presence of high temperature and intoxication of the body. If these measures fail to give the rapid effect, the sinus should be punctured and irrigated and a mixture of antibiotics, steroid hormones, protheolitic enzyme are instilled. The acute suppurative inflammation ends in 5-6 days. UHF, laser therapy of the maxillary sinuses should then be carried out daily. UV-therapy should be used locally and generally.

Chronic maxillary sinusitis. Chronic inflammation of the sinus is as a rule a sequel of acute sinusitis, which is recurrent in some patients. Acute inflammation persisting for more than 3 weeks should be considered as long-standing. If such inflammation does not terminate by the end of the 6th week, the disease can be considered chronic. Sometimes chronic maxillary sinusitis is associated with spreading of pathology from a caries-affected tooth.

A common symptom and complaint of patients with the exudative forms of chronic maxillary sinusitis is discharge from one side of the nose, which can be copious during exacerbation and scarce in remission. The purulent discharge in patients with maxillary sinusitis can be thick or liquid and have a specific odour. The mucopurulent discharge is tenacious and it dries in crusts. Catarrhal sinusitis is marked by tenadous mucous discharge which is often retained in the nasal cavity, and dries in crusts. The discharge in serous, or allergic maxillary sinusitis accumulates in the sinus and drains in portions when the patient assumes a certain position facilitating drainage of the sinus through the nasal meatus. An unpleasant odour is sometimes the main complaint of the patient who feels the smell himself. In bilateral chronic pathologies in the maxillary sinuses patients always complain of decreased sense of smell. Local or diffuse headache usually develops only during exacerbations or in obstructed drainage of the sinus. During remission, the general objective and subjective condition of the patient is satisfactory. Exacerbation of a chronic process can be attended with elevated temperature, worsening of the patient's condition, painful swelling of the cheek, oedema of the eyelid and local or diffuse headache.

Serous-catarrhal maxillary sinusitis facilitates formation of polyps which usually grow from the middle nasal meatus.In rare cases, in the presence of dental granuloma, cysts and fistulae in the sinus, a cholesteatoma can form from the cells of the squamous epithelium.

True (retention) cysts of the sinus form due to obstruction of the mucous glands. Pseudocysts can also develop in the sinus, but they differ from true cysts by the absence of the inner epithelial coat. The main symptom of a cyst is headache arising due to compression of the endings of the trigeminal nerve. Amber-coloured liquid can at times issue from one side of the nose, after which the headache subsides. This is a sign of spontaneous drainage of the cyst.
The pathological discharge from the nose and sinus (taken during antral puncture) is examined in the laboratory for the presence of microflora and for sensitivity to antibiotics. Diagnostic puncture of the maxillary sinus is widely used in older children. Pathology of the maxillary sinus should be differentiated from frontitis, ethmoiditis, and in rare cases from sphenoiditis. In adults it is necessary to rule out the odontogenic nature of the disease, especially in the presence of a suppurative process in the roots of the upper teeth (4, 5, 6), whose apices are in the immediate vicinity of the floor of the maxillary sinus.
Conservative treatment. Treatment should begin with elimination of causes of the disease. If maxillary sinusitis is odontogenic, the teeth should first of all be treated. It should be noted that radical operations on the sinus will be ineffective if the odontogenic cause remains active. In the presence of adenoids or adenoiditis in children, the tactics should be the same: the nasopharynx should first be treated, and only then should treatment of maxillary sinusitis be started. As a rule, general antibacterial treatment is administered during exacerbation.
Antral puncture and irrigation of the sinus with a disinfectant solution (furadn, potassium permanganate solution, peloidin) or enzymes (chymopsin), and administration into the sinus of a solution of the antibiotic to which the microflora is sensitive. In addition to the irrigation of the sinus, UHF and SHF therapy should be applied to the involved area. If conservative treatment of chronic suppurative maxillary sinusitis fails, a radical operation of the maxillary sinus is indicated.
Patients with the polypous and suppurative-polypous forms of maxillary sinusitis usually require radical surgical treatment which should be followed by conservative treatment to prevent relapses of polyposis. Postoperative conservative treatment includes endonasal electrophoresis with calcium chloride, regular administration of astringent preparations, and if signs of allergy are obvious, anti-allergic treatment is indicated. Patients with large cysts, cholesteatoma, caseous and necrotic maxillary sinusitis need surgical treatment.
Surgical treatment. Operations on the maxillary sinus are performed with endonasal and extranasal approach. The endonasal technique can be used to open the medial wall of the sinus and to perforate it for drainage and aeration of the sinus. The extranasal approach operation ensures an easy access to all parts of the sinus and the operation is therefore radical. This technique includes incision of the soft tissues under the upper lip, separation of these tissues, and approach to the anterior wall of the maxillary sinus. The sinus is then opened, the pathological matter removed, and a communication with the nasal cavity is made (through the inferior or middle nasal meatus).
Acute frontal sinusitis can be secondary to acute rhinitis and ethmoid sinusitis, general viral infection, acute respiratory disease, or chilling of the body.
The main symptoms of acute frontal sinusitis are pain in the forehead, diffuse headache, and purulent discharge from the involved side of the nose. Pain intensified on palpation or percussion of inferior wall of sinus. The nasal discharge is first serous and liquid; later it becomes purulent, odour is usually absent. Nasal respiration through the involved side is impeded. If the affection is pronounced, the body temperature can elevate to sub-febrile levels. The forehead in the area overlying the frontal sinus can be swollen and the skin hyperaemic. A special cannula is passed into the frontal sinus for diagnostic purposes and for irrigation. But since the approach to the sinus is through a curved frontonasal duct, this manipulation is not always possible. X-ray control is recommended during this operation.

X-ray examination and trepanation puncture of the frontal sinus are used for diagnostic and therapeutic purposes.
Treatment is usually conservative. But if the disease is longstanding and complications develop in the orbit, skull, or other organs, surgery should be performed immediately to eliminate the purulent focus and to restore patency of the frontonasal duct. Local treatment includes application of preparations causing anaemization of the nasal mucosa: vasoconstrictors drops (galasoline, naphtiziine). UHF- and SHF-therapy of frontal sinusitis is indicated only for cases where drainage of the sinus is adequate; otherwise physiotherapy will exacerbate the process. Elevated temperature and headache can be managed parenteral administration of antibacterial preparations in the appropriate doses.The absence of the desired effect is an indication for probing or puncture of the sinus.
Chronic frontal sinusitis. The most common cause of conversion of acute frontal sinusitis into its chronic form is persistent obstruction of the frontonasal duct and decreased reactivity of the body, especially subsequent to general infectious diseases. This process is promoted by hypertrophy of the middle concha, significant deformity of the nasal septum, a narrow or tortuous frontonasal duct, or polyps in the nasal cavity. There may be no complaints from the patient during remissions. A small amount of the nasal discharge often escapes into the nasopharynx to cause chronic pharyngitis, laryngitis, and tracheitis.
Palpation of the walls of the frontal sinus is often painful, especially at the upper internal angle of the orbit, which can be swollen. In the absence of microflora, obstruction of the frontonasal duct sometimes stimulates the accumulation of discharge in the sinus and the formation of mucocele consisting of secretions of the mucous glands. In the presence of infection in the sinus, a subperiosteal abscess can develop for the same reason; a suppurative fistula can also form, usually in the inferior wall, most frequently closer to the inner canthus of the eye
Treatment. In the absence of local and general complications, conservative treatment is indicated. It is directed at providing adequate drainage of the secretion from the sinus using vasoconstrictors which are instilled into the nose, and administration of antibacterial preparations (after preliminary testing of the microflora for sensitivity to these preparations). Trephination puncture of the frontal sinus with removal of its contents and subsequent irrigation and administration of medicinal preparations are effective.
Long-standing and persistent chronic frontal sinusitis (despite active treatment), and also symptoms of developing complications (and complications themselves) are indications for surgical treatment (operation of frontoethmoidotomy).
Acute ethmoid sinusitis commonly follows acute rhinitis, influenza, often in combination with acute inflammation of the other paranasal sinuses. Acute ethmoid sinusitis in children is secondary to an acute respiratory disease, measles, scarlet fever, and other infectious diseases; sometimes it has the character of necrotic osteitis, often in combination with acute maxillary sinusitis.
The symptoms of acute ethmoid sinusitis are pressing pain in the dorsum and the bridge of the nose, headache of various localization, and significant impediment of nasal respiration. The first days of the disease are marked by copious serous discharge from the involved side of the nose which later becomes muco-purulent or purulent. The discharge is usually odourless. Oedema and hyperaemia of the internal angle of the orbit and the adjacent parts of the lower and upper eyelids, and also conjunctivitis are frequent findings in children. Hypoosmia are also frequent.The temperature is usually between 37.5 and 38 °C and persists for a week.The diagnosis can be confirmed by X-ray examination. The nasal discharge should be studied for microflora and its sensitivity to antibiotics which will help assess the severity of the infection, prescribe the appropriate antimicrobial therapy.
Treatment is conservative. If any complications develop, surgical treatment is indicated.
Vasoconstrictors are instilled into the nose. The same preparations are applied under the middle

concha. UHF or SHF on the area of the ethmoidal sinus are indicated. If the body temperature is elevated, antibacterial preparations are given. If a closed empyema or ophthalmic complication develops, the cells of the ethmoidal labyrinth should be opened to gain access to the purulent focus in the orbit.

Chronic ethmoid sinusitis. The disease is often secondary to the affection of the other paranasal sinuses. Chronic ethmoid sinusitis therefore often concurs with frontal sinusitis, sphenoid sinusitis, and more frequently, maxillary sinusitis. The catarrhal-serous, catarrhal-suppurative and polipous forms of chronic ethmoid sinusitis prevail..

The symptoms depend on the activity of the disease. During remission, the patient complains of occasional headache, mostly in the region of the nose root and bridge; headache is sometimes diffuse. In serous-catarrhal ethmoid sinusitis, the nasal discharge is clear and copious. The suppurative form is characterized by a meagre discharge that dries to form crusts. Involvement of the posterior cells of the ethmoidal labyrinth promotes accumulation of the discharge in the nasopharynx, usually in the morning. Olfaction is impaired to some degree.

Treatment of non-complicated forms is usually conservative. Sometimes it is combined with endonasal operations (polypotomy, opening of cells of the ethmoidal labyrinth, partial resection of the conchae, etc.). Opening of the cells of the ethmoidal labyrinth and polypotomy with an endonasal approach are the most common operations.

Acute and chronic sphenoid sinusitis. Isolated affection of the sphenoidal sinuses is rare. The inflammation is usually combined with lesion of the posterior cells of the ethmoidal labyrinth.

Acute sphenoid sinusitis is marked by severe oedema of the mucosa. The most common subjective symptom of acute sphenoid sinusitis is headache in the occipital region and inside the head; the pain is sometimes felt in the orbit. Nasal discharge is often absent because it passes from the superior nasal meatus into the nasopharynx and further along the posterior wall of the pharynx, where it can easily be seen during pharyngoscopy and posterior rhinoscopy. The body temperature is usually subfebrile; the general condition is satisfactory; the patient can complain of weakness, discomfort, and irritability. X-ray examination is an important diagnostic tool. If the clinical picture is obscure, the sphenoidal sinus can be punctured through its anterior wall.

Treatment is usually conservative: local treatment with vasoconstrictors and general antibacterial treatment. If the disease lasts longer than 2 weeks, the sinus should be irrigated or opened endonasally. Symptoms of complications (septic, intracranial, ophthalmic) are indications for emergency operation on the sphenoidalsinus.Chronic sphenoid sinusitis is provoked by the same conditions as chronic affection of the other paranasal sinuses.

Orientative chart for self preparation students

Acute sinusitis:

1.Role of pathogenic flora causing sinusitis.
2.Exo- and endogenic factors, responsible for sinusitis
3.Primary and secondary sinusitis.
4.Understanding of mono-, hemi and pansinusitis.
5.Generaized and local symptoms of acute sinusitis.
6.Clinics, diagnosis of acute maxillitis.
7.Clinics, diagnosis of acute ethmoiditis
8.Clinics. diagnosis of acute frontitis.
9.Clinicas, diagnosis of acute sphenoiditis.
10.Peculiarities of acute sinusitis in children.
11.Local treatment of acute sinusitis (vasoconstrictor and antiseptic drops in nose, anemisation of

middle nasal meats.
12.Antibacterial therapy.
13.Hyposensitive and dehydration therapy.
14.Puncture of the maxillary sinus, its location, complication.
15.Trepanopuncture or catheterization of frontal sinus.
16. Indicates for surgical treatment of acute sinusitis.

Chronic sinusitis

1.Causes of beginning of chronic sinusitis (C.S)
2.Classification on the basis of location of pathological process
3.Pathologoanatomical classification of C.S
4.Purulent, purulent- polypous form of C.S
5.Which are the typical locations of polyps at early sinusitis
6.Understanding about allergic rhinosinusopathy.
7.Cystic stretcher of nasal sinuses, etiology, clinics
8. X-ray and tomogram examination.
9.Differential diagnosis of C.S and tumors of nasal cavity and sinus.
10.Which forms of sinusitis need conservative treatment, their principles.
11.Indications for surgical treatment.
12.Operations of frontal, ethmoidal, sphenoidal and maxillary sinuses.

Control test of the topic:

1.Which one of these can be the cause of chronic sinusitis?
a)inflammatory process in the tympanic tube.
b)chronic laryngitis.
c)chronic pharyngitis.
d)dental caries.
e)adenoid vegetation.
2.What ways of entrance of the infection to the nasal sinus?
a)Tympanic tube.
b)choane.
c)trauma of the sinus wall
d)natural aperture in the nasal cavity
e)external nose.
3.Which of this diseases are the form of chronic sinusitis?
a)mucocele.
b)sinusthromboses.
c)hyperplastic form.
d)tromboembolya.
e)polypous-purulent process.
4.Which of these symptoms characterize the chronic sinusitis
a)permanent belch of air.
b)noise in the ear
c)headache in the frontal region
d)byrhynoscopy – pus in the middle nasal meats
e)difficulty of nasal respiration.
5.Which from following examinations are required for diagnosis of chronic sinusitis?
a)general and clinical analysis of blood.
b)X-ray of nasal sinuses.

c)X-ray of thorax.
d)contrast X-ray of nasal sinus.
e)anterior and posterior rhynoscopy.
6.In which situations do you prefer the puncture of the sinus maxillaries?
a)chronic catarrhal sinusitis.
b)chronicfrontitis.
c)presence of poliposys in the nasal cavity.
d)dark sinus maxillaries on X-ray pictures.
e)atrophic rhinitis with crust in the nose.
8. What symptoms of frontitis are character :
a)downfall of memory and intelligence.
b)raucous, mild voice.
c)headache in the occipital region.
d)pus in the middle nasal meats.
e)headache in the frontal region.
9.During chronic purulent maxillitisrhinoscopy shows:
a)atrophy of mucous membrane of the nasal cavity
b)hypertrophy of mucous membrane of the nasal cavity.
c)polyposis in the nasal openings.
d)hyperemia and enlargement of middle nasal conch.
10.What are the symptoms of sinus inflammation at:
1.Maxillitis. 2. Ethmoiditis.
a)choanal polyposis.
b)multiple polyposis.
c)pus in the dorsal part of the superior nasal meats .
d)pus in puncture via inferior nasal meats
e)defect of the sinus' filling by the contrast substance.
11.What are the various factors capable of causing sinusitis?
a, b, c
12.Name the orbital complications during acute sinusitis:
1.purulent: a) b)
2.non-purulent: a) b) c)
14.What of the following pathological process are present in case of
1) frontitis and 2) sphenoiditis:
a)irradiated pain in occiput
b)purulent discharges under the anterior end of the middle nasal conch .
c)purulent discharges under the posterior end of the middle nasal conch .
d)increased pain by leaning the head forward in the laying position.

Control questions of the discussed topic

1.What are the tracts of spread of infection in the sinuses.
2.Symptoms and methods of treatment of acute maxillitis, frontitis, ethmoiditis, sphenoiditis.
3.Significance of sinusitis in infant.
4.Etiology, evolving the chronic sinusitis.
5.Rhinoscopic picture at different forms of sinusitis.
6.Which type of maxillitis have conservative and operative ways of treatment.
7.What are the non-typical forms of location of polyposis during different kinds of sinusitis.
8. Allergic rhynosinusopathy, clinics, diagnosis, treatment.

9.Basic principles of surgical treatment of sinusitis.

10.Etiology of cyst formation in sinuses.

Homework: finding solutions of following sinus problems:

Problem 1: Patient feels mild cold, restlessness, headache, subfibrillar temperature, difficulty in nasal respiration (the left one), abundant muco-purulent fluid from left part of the nose. Objective: Hyperemia develops of mucous layer of left part, pus is in the nasal meddle meats.

1.What the patient is suffering from?

a)maxillitis.

b)frontitis.

c)acute rhinitis.

2. Which of the following ways of diagnosis would you use:

a)general analysis of blood.

b)investigation of the nasal cavity.

c)X-ray of nasal sinus.

d)investigation the nose's discharges.

Answers to the self-test

1.b,c 2.b,c,d 3.c,d 4.d 5.c,d,e 6.a.d 7.c,d 8.c,d 9.b,c

10. 1.a,d,e; 2.b,c 11.a)Acute respiratory infection. b)Disturbed nasal respiration. c)Decreased reactivity of organism. 12.1.a)subperiostial abscess. b)phlegmone of orbit. 2.a)eyelid edema. b)periostitis. c)neuritis of nervusopticus.

13.a)pthosis. b)exophtalmia. c)chemosis. d)shivering. 14.1.b,d 2.a,c

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Electronic information resources

1. World Health Organization. URL: www.who.int/ru/index.html.
2. European Regional Office of the World Health Organization. URL: www.euro.who.int.
3. www.ama-assn.org – American Medical Association

4. www.dec.gov.ua/mtd/home/ - State Expert Center of the Ministry of Health of Ukraine
5. http://bma.org.uk– British Medical Association
6. www.gmc-uk.org- *General Medical Council* (*GMC*)

7.www.bundesaerztekammer.de – German Medical Association

Practical lesson No. 10

Topic: "Rhinogenic and otogenic intracranial and orbital complications."

Purpose: to acquaint students with the ways of penetration of infection from the nose and paranasal sinuses and the middle and inner ear into the cavity of the skull and the orbital area and the mechanisms of development of various intracranial and intraorbital complications. Contribute to the formation of a record of a highly professional doctor who understands the issues of intracranial and intraorbital complications from the position of in-depth knowledge of the clinical, anatomical, physiological aspects of the pathology being studied.

The student ***should know***: - clinic; - diagnostics; - differential diagnosis; - methods of surgical and conservative treatment of patients with a) otogenic intracranial complications, b) rhinogenic intracranial complications c) rhinogenic intraorbital complications

The student ***should be able to***: - examine a patient with intracranial complications and make a diagnosis based on the received information and additional research data; - examine a patient with intraorbital complications and make a diagnosis based on the information received and the data of additional research; - substantiate the clinical diagnosis and carry out a differential diagnosis with other inflammatory and non-inflammatory intracranial and intraorbital diseases.

Basic concepts: Otogenic, rhinogenic intracranial and intraorbital complications represent one of the most complex and difficult problems of modern clinical medicine due to the complexity of their clinical course, diagnosis, treatment and still very high mortality. Therefore, knowledge of the etiology, pathogenesis, clinic and diagnosis of these complications is extremely necessary for doctors of various profiles (otolaryngologists, therapists, neuropathologists, neurosurgeons, infectious disease specialists, etc.).

Equipment: tables, dummies, simulators, multimedia presentations, video films, tool sets, tuning forks, tomograms, radiographs, etc.

Plan

№№	The name of the composition of the class	Hour
I.	Organizational moment (greetings, checking those present, announcing the topic, the purpose of the lesson, motivating students to study the topic).	7
II.	Control of supporting topics.	38
2.1	Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units).	8
2.2	Questions (test tasks, problems, clinical situations) to check basic knowledge on the subject of the lesson.	30
III.	Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.).	40
3.1	Content of tasks (tasks, clinical situations, etc.).	20
3.2	Recommendations (instructions) for performing tasks (professional algorithms, orienting maps for the formation of practical skills and abilities, etc.).	3
3.3	Requirements for work results, including to registration	2
3.4	Control materials for the final stage of the lesson: problems, tasks, tests, etc. (if necessary).	15
IV.	Summing up.	5

Control of reference knowledge.

Formation of the image of a highly professional doctor who understands the issues of intracranial and intraorbital complications from the position of in-depth knowledge of the clinical, anatomical, physiological points of the pathology being studied. Education of specialists with a sense of professional responsibility of the doctor, the ability to correctly assess objective methods of research, understanding the significance of these studies for the legal , psychological and professional rehabilitation of the patient.

Tasks and tests to determine the entry level of knowledge

1. Patient R., 34 years old, was admitted to the ENT department with complaints of hearing loss in the left ear, purulent discharge from it. He has been ill for many years. Three years ago, he suffered otogenic meningitis, which was treated conservatively. Otoscopy - purulent discharge with an unpleasant smell in the auditory canal. Marginal perforation is visible in the front sections of the unstretched section, behind which grayish masses are visible. A CT scan of the temporal bones reveals bone destruction in the antrum and aditus on the left. Your diagnosis:

A. exacerbation of chronic mesotympanitis
V. St. exacerbation of chronic mesotympanitis complicated by mastoiditis
S. exacerbation of chronic epitympanitis
D. exacerbation of chronic epitympanitis complicated by cholesteatoma
E. exacerbation of chronic epimesotympanitis

2. Patient R., 34 years old, was admitted to the ENT department with complaints of hearing loss in the left ear, pus coming from it. He has been ill for many years. Otoscopy - purulent discharge in the auditory canal, with an unpleasant smell. Marginal perforation is determined in the anterior parts of the unstretched part, behind which grayish masses are visible. A CT scan of the temporal bones reveals bone destruction in the antrum and aditus on the left. What is the volume of surgery for this patient?

A. antrotomy
B. antromastoidotomy
S. antroathicotomy
D. tympanoplasty
E. radical operation

3. Patient D., 58 years old, was brought to the ENT department of the regional hospital. During admission, the condition is difficult, consciousness is confused, a severe headache bothers. Marked stiffness of the muscles of the back of the head, "+" Kernig's sign. On examination: in the left auditory canal there is a purulent separated, extensive marginal perforation in the unstretched part of the tympanic membrane, behind which gray masses are visible. Your diagnosis:

A. exacerbation of chronic mesotympanitis
B. exacerbation of chronic epitympanitis
C. exacerbation of chronic epitympanitis, otogenic meningitis
D. exacerbation of chronic epimesotympanitis
E. exacerbation of chronic mesotympanitis, otogenic meningitis

4. Patient Do., 58 years old, was brought to the ENT department. During admission, the condition is difficult, consciousness is confused, a severe headache bothers. Marked stiffness of the muscles of the back of the head, "+" Kernig's sign. On examination: in the left auditory canal there is a purulent separated, extensive marginal perforation in the unstretched part of the tympanic membrane, behind which gray masses are visible. What is the volume of surgery:

A. atticotomy
B. antroatticotomy
S. mastoidotomy
D. radical operation
E. extended radical operation

5. Patient D., 58 years old, was brought to the ENT department. During admission, the condition is difficult, consciousness is confused, a severe headache bothers. Marked stiffness of the muscles of the back of the head, "+" Kernig's sign. On examination: in the left auditory canal, purulent, separated, sheathing marginal perforation in the unstretched part of the tympanic membrane, behind which gray masses are visible. What additional research method will be decisive in the specified diagnosis?

A. general blood test
B. R is a gram of the temporal bone according to Schuller
S. cerebrospinal fluid research data
D. nuclear magnetic resonance
E. CT of the temporal bone

6. Patient N., 34 years old, was admitted to the ENT department with complaints of hearing loss in her right ear and periodic purulent discharge from it. From the anamnesis, it was found that the ear has been bothering since childhood, exacerbations of the process occur periodically (1-2 times a year). On examination: there is no discharge in the auditory canal. There is a central perforation in the stretched part of the tympanic membrane, there are no secretions in the tympanic cavity, the mucous membrane of the medial wall is pale pink. The auditory tube is passable. No bone-destructive manifestations were detected on the CT scan of the temporal bones. On the audiogram, there is a uniform increase in air-conducted sound thresholds by 15-20 dB across the entire tone scale. Your diagnosis?
A. right-sided adhesive otitis
B. right-sided chronic epitympanitis, remission
S. right-sided chronic mesotympanitis, remission
D. exacerbation of right-sided chronic mesotympanitis
E. exacerbation of right-sided chronic epitympanitis
7. Patient Zh., 43 years old, came to the ENT department with complaints of hearing loss in her right ear, purulent discharge from it. From the anamnesis, it was found that the ear has been bothering since childhood, exacerbations of the process occur periodically (2-3 times a year). During examination: muco-purulent discharge in the auditory canal. In the stretched part of the tympanic membrane, there is a central perforation, in the tympanic cavity there is also mucous and purulent discharge, the mucous membrane of the medial wall is hyperemic. The auditory tube is poorly passable. No bone-destructive manifestations were detected on the CT scan of the temporal bones. On the audiogram, there is a uniform increase in sound conduction thresholds by 25-30 dB across the entire tone scale. What is your diagnosis?
A. right-sided acute otitis media in the stage of perforation
B. right-sided acute otitis media in the stage of perforation, mastoiditis
S. exacerbation of right-sided chronic epimesotympanitis
D. exacerbation of right-sided chronic mesotympanitis
E. exacerbation of right-sided chronic epitympanitis
8. Patient M., 25 years old, was admitted to the ENT department with complaints of hearing loss in the left ear, periodic purulent discharge from it. From the anamnesis, it was found that the patient's ear has been bothering him since childhood, exacerbations of the process occur periodically (once a year, after SARS). The last exacerbation - 10 months. ago. On examination: there is no discharge in the auditory canal. There is a central perforation in the stretched part of the tympanic membrane, there is also no discharge in the tympanic cavity, the mucous membrane of the medial wall is pale pink. The auditory tube is passable. No bone-destructive manifestations were detected on the CT scan of the temporal bones. On the audiogram, there is a uniform increase in sound conduction thresholds by 10-15 dB across the entire tone scale. What is the estimated volume of the operation?
A. right-sided antromastoidotomy
B. right-sided separate antroatticotomy
S. right-sided myringoplasty
D. radical operation on the right ear
E. shunting of the tympanic membrane on the right
9. Patient T., 17 years old, was admitted to the ENT department. He does not present a complaint, sent by the ENT doctor of the district military committee to clarify the diagnosis. From the anamnesis, it was found that the patient's ear had never bothered him before. On examination: the auditory canal is wide, there is no discharge. In the stretched part of the tympanic membrane there is a punctate dry central perforation, in the tympanic cavity there are also no secretions, the mucous membrane of the medial wall is pale pink. The auditory tube is passable. No bone-destructive manifestations were detected on the CT scan of the temporal bones. On the audiogram, hearing is within the age norm. Your diagnosis?
A. adhesive otitis
B. chronic epitympanitis, remission
S. chronic mesotympanitis, remission
D. chronic epimesotympanitis, remission

E. exudative otitis

10. A 21-year-old man came to see an ENT doctor with complaints of slight pain in the right ear, hearing loss in that ear, discharge from it. Sick for the third day. Six months ago there was the same situation, he treated himself, dripped drops into his ear. On examination: in the ear there is a muco-purulent discharge, there is a medium-sized round central perforation in the tympanic membrane. Your diagnosis:

A. Acute purulent otitis media
B. Exacerbation of chronic mesotympanitis
C. Chronic epitympanitis
D. Exacerbation of chronic epimesotympanitis
E. Chronic mesotympanitis

11. At the reception at the polyclinic during the examination of a patient with chronic epitympanitis, the ENT doctor asked the nurse to give him a Voyachek probe. For what purpose is this tool used?

A. For the toilet of the auditory canal
B. To study the patency of the auditory tube
C. To determine the dimensions of the perforation
D. To study the attic
E. For the enclosure of material for microbiological research

12. What type of middle ear repair operation is optimal for chronic epitympanitis complicated by cholesteatoma and paresis of the facial nerve. Choose one correct answer:

A. antrotomy
B. antroatticotomy
S. mastoidanthrotomy with mastoidoplasty
D. radical operation
E. extended radical operation

13. Washing of the supratympanic space (attic) in case of exacerbation of chronic epitympanitis is carried out with the help of:

A. of the Politzer balloon
Zhanni's syringe
S. Hartmann's cannulas
D. Zigle's funnel
E. Ratskachki Barani

14. To wash the supratympanic space (attic) during an exacerbation of chronic epitympanitis with a cholestomy, it is advisable to use:

A. solution of boric acid
B. furacilin solution
S. chloramphenicol solution
D. alcohol solutions 60 - 700
E. oil solutions

15. Patient D., 65 years old, was brought to the ENT department. During admission, the condition is difficult, consciousness is confused, a severe headache bothers. T - 38.8C, pulse 98 in 1 minute. There is photophobia, marked rigidity of the muscles of the back of the head, "+" Kernig's symptom. On examination: in the left auditory canal there is a purulent separated, extensive marginal perforation in the unstretched part of the tympanic membrane, behind which gray masses are visible. What additional research method will be decisive for clarifying the diagnosis?

A. general analysis B. R is a gram of the temporal bone according to Schuller
S. cerebrospinal fluid research data
D. nuclear magnetic resonance
E. CT of the temporal bone

16. A patient St., 60 years old, was admitted to the ENT department with complaints of sharp hearing loss in the left ear, purulent discharge. He has been ill for many years. Periodic exacerbations were replaced by remissions for six months. Otoscopy - pus separated in the auditory canal, after its removal it became clear that the eardrum and auditory ossicles are absent in the

patient. The mucous membrane of the medial wall of the tympanic cavity is hyperemic and swollen. No bone-destructive changes were detected on the CT scan of the temporal bones. Your diagnosis:

A. exacerbation of chronic mesotympanitis
B. exacerbation of chronic mesotympanitis complicated by mastoiditis
S. exacerbation of chronic epitympanitis
D. complication of chronic epitympanitis complicated by cholesteatoma
E. exacerbation of chronic epimesotympanitis

17. On a professional examination, the ENT doctor found a 30-year-old man with extensive perforation in the stretched part of the tympanic membrane in the right ear. The patient notes, according to him, a slight decrease in hearing in this ear, there was suppuration in early childhood, there was no discharge from the ear for many years. Your diagnosis:

A. Chronic mesotympanitis
B. Exacerbation of chronic mesotympanitis
S. Chronic epitympanitis
D. Exacerbation of chronic epitympanitis
E. Acute purulent otitis media

18. A 22-year-old woman came to see an ENT doctor with complaints of severe pain in the right ear, hearing loss in that ear, pus coming from it. Sick for the second day. The ear has been sick since childhood, there was an exacerbation 5 months ago, it was treated in a hospital, surgical treatment was recommended as planned. On examination: purulent discharge with an unpleasant odor is present in the ear, there is extensive perforation in the unstretched part of the eardrum. Grayish masses are visible behind the perforation. Your diagnosis:

A. Chronic mesotympanitis
B. Exacerbation of chronic mesotympanitis
C. Chronic epitympanitis
D. Exacerbation of chronic epitympanitis
E. Adhesive otitis

19. A 41-year-old man came to see an ENT doctor with complaints of moderate pain in the right ear, hearing loss in that ear, purulent discharge from it. Sick for the third day. I had the same situation 6 months ago, treated myself, dripped drops into my ear. On examination: there is muco-purulent discharge in the ear, there is an extensive central perforation in the tympanic membrane. Your diagnosis:

A. Chronic mesotympanitis
B. Exacerbation of chronic mesotympanitis
S. Chronic epitympanitis
D. Exacerbation of chronic epimesotympanitis
E. Acute purulent otitis media

20. A 27-year-old woman came to see an ENT doctor with complaints of hearing loss in the left ear, ringing in the ear. From the anamnesis, it was found that more than 3 months ago, she received a blow on the ear with an open palm. She did not seek medical help. On examination: there is no discharge in the ear, there is a small perforation in the stretched part of the eardrum. What, taking into account the past after the trauma of time, will be your diagnosis:

A. Acute purulent otitis media
B. Exacerbation of chronic mesotympanitis
S. Chronic mesotympanitis
D. Exacerbation of chronic epitympanitis
E. Acute traumatic otitis

21. What is the treatment of an exacerbation of chronic mesotympanitis before receiving a response to a microbiological examination of the discharge from the ear?

A. Treatment is not carried out
B. Toilet of the ear, restoration of the function of the auditory tube
S. Toilet of the ear, restoration of the function of the auditory tube, broad-spectrum antibiotics locally

D. Ear toilet, restoration of auditory tube function, oral broad-spectrum antibiotics
E. Dry and wet ear toilet

16. For a dry toilet of the auditory canal, the following is used:
A. Ear probe with a screw thread
B. Button probe
S. Voyachek's probe
D. Ballon Politzer
E. Otoscope

22. Patient D., 58 years old, was brought to the ENT department. During admission, the condition is difficult, consciousness is confused, a severe headache bothers. Marked stiffness of the muscles of the back of the head, "+" Kernig's sign. On examination: in the left auditory canal, purulent, separated, sheathing marginal perforation in the unstretched part of the tympanic membrane, behind which gray masses are visible. What additional research method will be decisive in the specified diagnosis?
A. general blood test
B. R is a gram of the temporal bone according to Schuller
S. cerebrospinal fluid research data
D. nuclear magnetic resonance
E. CT of the temporal bone

23. Myringoplasty is an operation whose purpose is:
A. rehabilitation of the tympanic cavity
B. restoring the integrity of the eardrum
C. restoration of the integrity of the chain of auditory ossicles
D. restoration of patency of the auditory tube
E. restoration of the lateral wall

A 2-year-old child suffered from a runny nose for two weeks, mucous-purulent discharge from the nose. Two days ago, infiltration appeared in the area of the inner corner of the eye on the right, and the body temperature rose. On the x-ray of the additional sinuses, darkening of the cells of the lattice labyrinth is determined. What bone is affected by contact penetration of infection from the lattice labyrinth into the orbit?
A. sieve plate
V. lacrimal bone
S. perpendicular plate of the ethmoid bone
D. paper plate of the ethmoid bone
E. main

4. Against the background of exacerbation of chronic purulent frontitis, the patient developed a severe headache, nausea, vomiting, the temperature rose to high numbers, and meningeal signs appeared. What changes in the cerebrospinal fluid are most characteristic of rhinogenic meningitis?
A. protein-cell dissociation
B. reduction of sugar in liquor
C. decrease in chloride content
D. high cytosis, high CSF pressure
E. increase in protein level

5. The course of chronic purulent frontitis in the patient was complicated by an abscess in the region of the anterior cranial fossa, which was diagnosed with the help of computer tomography. What methods of surgical intervention are necessary for this rhinogenic complication?
A. frontoethmoidotomy without exposure of the dura mater of the anterior cranial fossa
B. dissection of the dura mater by an otolaryngologist
S. removal of abscess by neurosurgery
D. frontoethmoidotomy with removal of the cerebral wall of the frontal sinus
E. only conservative therapy

Formation of professional skills and abilities.

Lesson content

Otogenic intracranial complications arise as a result of the spread of the pathological process from the temporal bone into the skull cavity. They are found in 3% of patients who are being treated in the clinic with various inflammatory diseases of the ears. Mortality in otogenic intracranial complications reaches 24%.

The possibility of the occurrence of otogenic intracranial complications and the finding of pathological changes are largely predicted by the anatomical relationships between different parts of the ear and cranial spaces. The temporal bone with the cavities of the middle and inner ear included in it forms the bottom of the back part of the middle and front part of the back cranial fossa. The contents of the latter are separated from the middle ear cavity only by thin bony walls. These walls have numerous openings for blood vessels, nerves, and labyrinth fluid. In connection with the anatomical features of the structure of the ear, there are reshaped ways of spreading the infection - hematogenous, perineural, lymphogenic, as well as the contact way - due to the destruction of bone walls. The spread of infection from the middle ear cavity to the contents of the brain skull is carried out in the following directions:

1). Through the upper wall of the tympanic cavity and the cave of the mastoid process into the middle cranial fossa. Infants have an unclosed bony gap here - between the pyramid and the temporal bone;

2). Of the cells of the mastoid process, among which the angular cells, which are protruded between the middle cranial fossa and the sigmoid groove, are of particular importance. Along the entire length, the cellular system of the mastoid process is close to the contents of the posterior and partially middle cranial fossa;

3). Through the lower wall of the tympanic cavity, which sometimes has openings in bone plate covering the bulb of the jugular vein;

4). From the inner ear, through the aqueduct of the convolutions and premenstruum, through the internal auditory canal into the posterior cranial fossa.

The etiological factor of otogenic intracranial complications is a diverse bacterial flora. In acute otitis, coccal flora prevails - staphylococcus, streptococcus, less often - pneumococcus. In case of chronic purulent otitis media, proteus, bacilli and other microorganisms are also released.

OTOGENIC MENINGITIS (leptomeningitis) is an inflammation of the soft and arachnoid meninges and is one of the most dangerous otogenic intracranial complications. Meningitis is divided into widespread and limited (subdural suppuration), purulent and serous. Otogenic meningitis should be considered as disseminated purulent meningitis. Serous changes in otogenic meningitis will be in the initial stage of purulent meningitis or as a result of toxic swelling of the membranes, arising in other intracranial complications, i.e. accompanying meningitis with sinus thrombosis, brain abscess.

The clinic of otogenic purulent meningitis is diverse and rich in symptoms.

I. General symptoms:

- high temperature (38-40°C). The temperature curve is constant with minor fluctuations within 1°C. The duration of the temperature reaction and its expressiveness is determined by the intensity of adequate therapy;
- changes in cardiovascular activity (depends on intoxication). Pronounced tachycardia, labile pulse, muffled heart sounds, myocardial dystrophy on the ECG;
- the course of the disease and the general stage of patients is always difficult.

II. General brain symptoms:

- consciousness is confused or without consciousness;
- nonsense, excitement or inhibition, insomnia;
- the headache reaches significant intensity and is diffuse;
- nausea, vomiting, not related to food and occurs when the headache worsens.

III. Membranous or meningeal symptoms:

- the stiffness of the muscles of the back of the head is expressed in the tension of the posterior neck muscles when trying to passively bend the patient's head forward so that the chin can touch the sternum with the mouth closed;
- Kernig's symptom - resistance, pain when the leg is extended in the knee joint while lying on the back;

- Brudzinsky's symptom (upper) - bending of the legs in the hip and knee joints in response to tilting the head forward;
- Brudzinsky's symptom (medium) - the same movement of the legs when pressing on the pubic joint;
- Brudzinsky's symptom (lower) or contralateral - extension in the knee joint of the leg, predictably bent in the hip and knee joints, which is accompanied by bending of the other leg;
- the symptom of "hanging" - lifting the child by taking his arms, bending of the limbs in the knee and hip joints is noted;
- and some others ("cheek phenomenon", Edelman's symptom, Hien's symptom).

In infants, meningeal signs (Kernig's symptom, stiffness of the occipital muscles) are usually not expressed. An important symptom of meningitis in them is the tension of bulging of the tympanic membrane, their poor or absent pulsation and general convulsions.

It should be noted that of all meningeal symptoms, the most constant and always, to one degree or another, pronounced symptom in otogenic meningitis is the stiffness of the muscles of the back of the head.

In severe cases, when the patient is lying down, it is impossible to remove his head from a horizontal position, i.e. when the head is all the time in a significantly tilted back state (this symptom is also positive with other intracranial complications, especially in the posterior cranial fossa) - the meningeal pose or "shotgun chicken" or "sleeping dog pose".

Attention is paid to signs of increased irritation in the sensitive area, which is primarily expressed in skin hyperesthesia (irritation of the posterior roots of the spinal cord) and hyperalgesia of the patient to each external stimulus (light, sound) and to each manipulation on it. Some of the symptoms of irritation of the sensitive area already occur in the very first stages of the disease, so they are given special importance (Kühlenkampf's symptom, Knick's symptom, Kerrer's point pain).

Focal symptoms are rare. Manifested when joining encephalitis (meningoencephalitis) or brain edema. Meningoencephalitis is accompanied by damage to the motor system, which connects the motor centers of the cortex of the large hemispheres with the motor nuclei of the cranial nerves and cells of the anterior horns of the spinal cord; pyramidal signs appear (symptoms of Babinski, Rossolimo, Zhukovsky, Gordon, Oppenheim):

- damage to the cranial nerves (spread of the process to the base of the brain), paresis of the VI pair, which innervates the external rectus muscle (paresis is associated with irritation of the membranes in the area of the bridge-cerebellar angle) and damage to the brain substance (encephalitis);
- hemiplegia, hemianopsia, hemianesthesia;

In all cases when we suspect intracranial complications and meningitis in particular, lumbar puncture is an indispensable diagnostic method (see Table No. 1).

SINUS THROMBOSIS (Sepsis, thrombosis of the sigmoid sinus)

I. General symptoms:

and). Intermittent fever. Chills with sweating. Three-hour temperature swings within 2-3°C;

b). The course is acute (sepsis, phlebitis, sinus thrombosis, latent sinus thrombosis);

in). In the blood - an acute inflammatory reaction, shift of neutrophils to the left, toxic granularity of leukocytes, anisocytosis, poikilocytosis;

d). Inflammatory changes in the lungs, kidneys, etc.

II. General brain symptoms:

and). Headache without exact location;

b). Nausea;

in). Stagnant nipple of the optic nerve;

d). Stiffness of the occipital muscles.

III. Focal symptoms:

and). Griesinger's symptom - pain during palpation behind the nipple;

b). Levin's symptom - pain along the course of the internal jugular vein;

in). Fossa's symptom - absence of noise during auscultation over the jugular vein;

d). Queckenstedt's symptom - the absence of increased pressure of the cerebrospinal fluid in response to pressing the jugular vein, during a lumbar puncture.

BRAIN ABSCESS:

I. COURSE:
• the initial period (general and general cerebral symptoms);
• latent period (general cerebral symptoms);
• clear period (general, brain-wide and focal symptoms);
• terminal period.
II. GENERAL SYMPTOMS:
and). Apathy, suffering facial expression, pale yellow skin color, subfebrile temperature;
b). Exhaustion, coated tongue, bad breath;
in). Drowsiness, apathy, bulemia.
III. GENERAL CEREBRAL SYMPTOMS:
and). A headache, with an exact location, is not relieved by analgesics;
b). Vomiting regardless of the perception of food;
in). Absolute or relative bradycardia (to body temperature);
d). Stiffness of the occipital muscles.
IV. FIRE SYMPTOMS:
and). Aphasia (with left-sided processes), amnestic, sensory, motor, semantic;
b). Hemiparesis on the opposite side, paresis of the facial nerve, abductor, oculomotor, vagus nerves;
in). Hemianopsia (loss of half of the visual field on the opposite side);
d). Pathological reflexes (Babinsky, Gordon, Oppenheim).
V. CEREBRAL FLUID (high protein, lymphocytosis, sugar increase).
When the right hemisphere of the brain is excluded, specific figurative thinking is disturbed - monotonous talkativeness, auditory and visual agnosia are revealed, but the positive emotional tone is preserved and even strengthened. When the left hemisphere is excluded, logical abstract thinking is lost - the vocabulary is impoverished, the patient does not remember the names of objects, he develops a negative emotional background.
CEREBRAL ABSCESS CLINIC:
1. General symptoms.
2. General brain symptoms (analogous to brain abscess).
C. Focal symptoms:
and). Violation of coordination of movements - adiadochokinesis, falling in Romberg's pose, failure to perform finger-nose, knee-heel tests, etc.;
b). Decreased muscle tone;
in). Nystagmus in the affected side.
4. Cerebrospinal fluid (analogous to a brain abscess).
EXTRADURAL ABSCESS is the accumulation of pus between the dura mater and the bone. When the complication develops, there is a significant discharge of pus from the focus of the infection - from the ear.
I. General symptoms:
and). Localized pain;
b). Possible stiffness of the occipital muscles, Kernig's symptom;
in). Focal symptoms are rare;
d). When the abscess is located in the middle cranial fossa - paresis of the opposite limb, sensitivity disorders, seizures;
d). When an abscess is found in the posterior cranial fossa - nystagmus, impaired coordination of movements, low muscle tone on the affected side.
SUBDURAL ABSCESS - accumulation of pus under the dura mater. Depending on the volume of the abscess and its location, focal symptoms appear in the form of:
and). Light pyramidal signs on the opposite side (when located in the middle cranial fossa);
b). Cerebellar symptoms – nystagmus, a miss during a finger-nose test (when an abscess is found in the posterior cranial fossa);
in). A remitting course of meningeal syndrome with moderate pleocytosis in the cerebrospinal fluid (up to 200-300 cells) is characteristic;
d). Often, a subdural abscess has a hidden cou

RHINOGENIC COMPLICATIONS.

The number of rhinogenic complications (orbital and intracranial) remains at a high level.

Orbital complications are mostly observed in childhood and develop more often in acute sinusitis.

The most rapid rhinogenic complications develop early, especially in infancy, when the symptoms of orbital damage appear before the manifestation of sinus lesions (as a rule, acute ethmoiditis).

When the infection spreads from the nasal cavity, nasal sinuses to the contents of the eye socket and brain skull, there are the following:

1. Anastomoses between blood and lymphatic vessels.
2. Close interaction between the follicles of the teeth and the base of the eye socket.
3. Lacrimal-nasal canal.
4. Contact path due to bone destruction.

ORBITAL COMPLICATIONS

Non-purulent complications:

1. Swelling of the eyelids
- General symptoms of an inflammatory disease (as opposed to edema of non-inflammatory origin).
- Hyperemia, infiltration of soft tissues of the eyelids above the corresponding sinus.
- Lowering of the eyelid, narrowing of the eye slit.
2. Periostitis.
- Moderate displacement of one apple.
- Slight limitation of the mobility of the eyeball in the direction of the lesion.
3. Reactive edema, infiltration of the eye socket.
- Exophthalmos due to inflammatory infiltration of soft tissues behind the eyeball.
- Restriction of mobility of the eyeball.
- Moderate chemosis of the conjunctiva.

Purulent complications:

1. Eyelid abscess.
- Cyanotic skin of swollen eyelids.
- Fluctuation.
- Vascular pattern of the skin.
2. Subperiosteal abscess.
- Headache - diffuse, mainly in the orbits.
- Nausea.
- Congestive nipple of a healthy nerve.
- Stiffness of the back of the head.
3. Focal symptoms.
- Bilateral lagophthalmos and exophthalmos.
- Bilateral chemosis and conjunctival hemorrhage.
- Congestion in the veins of the retina.
- Deterioration of vision.
4. Cerebrospinal fluid is not changed.

MENINGITIS. BRAIN ABSCESS.

With rhinogenic lesions of the brain, complications usually develop in the frontal lobe.

The frontal lobes are involved in the formation and regulation of motor acts and behavior. Various efferent motor systems, corticospinal and corticonuclear pathways begin here (numerous conductors to the subcortical and stem formations go here).

Symptoms of damage to the frontal lobes:

1. Central paralysis and paresis. Gaze paresis - "the patient looks at the focus of the lesion." Mimic paresis of the facial nerve.
2. Cypokinesis (decreased motor initiative).
3. Frontal ataxia, inability to stand, walk. Deviation of the body in the opposite direction.
4. Frontal apraxia (incomplete action).
5. Motor aphasia.
6. Epileptic seizures.
7. Mental disorders (aggressiveness).

8. Short-term loss of consciousness.

EXTRADURAL AND SUBDURAL ABSCESS.

1. Localized pain.
2. Moderate signs of pressure on the frontal lobes of the brain.
3. Remitting course of meningeal syndrome.

DIAGNOSTICS OF COMPLICATIONS.

Additional laboratory data characterizing the state of blood and cerebrospinal fluid play a significant role in diagnosis. X-ray examination, which emphasizes the condition of the ENT organ, the presence of foci of destruction in it, which are the entrance and gate to the spread of infection, is of significant importance in the assessment of complications.

When clarifying the nature of the complication, research methods conducted in specialized institutions are of great importance. These include: electroencephalography, echo-encephalography, pneumoencephalography, angiography, rheoencephalography.

TREATMENT OF ORBITAL AND INTRAcranial COMPLICATIONS.

The occurrence of rhinogenic complications requires the following treatment measures:

1. Surgical treatment - operations on paranasal sinuses, opening of abscesses of the eyelids, under the bone, in the eye socket; in case of meningitis - exposure of the dura mater, in case of brain abscess - finding it, evacuation of contents, drainage.
2. Antibiotic therapy: it is desirable to use oxacillin, carbonicillin, in severe cases - heparin, keorzol.
3. Dehydration.
4. Detoxification.
5. Desensitization.
6. Immunotherapy.
7. Hypothermia.
8. Ganglioblockers.

WORK PERFORMANCE METHODS, PERFORMANCE STAGES:

1. Divide into small supervising groups (3-4 men);
2. Check the equipment of the workplace (availability of inspection tools.);
3. Prepare a plan for examining the patient using general propaedeutic methods and a plan for a functional study of the ENT organs;
4. Repeat the OOD scheme "Examination of the patient in charge".

Questions to control the final level of knowledge:

1. Ways of penetration of infection from the middle ear into the skull cavity.
2. List otogenic intracranial complications.
3. Symptoms of sigmoid sinus thrombosis.
4. In which diseases of the middle ear did thrombosis of the sigmoid sinus occur. What is the mechanism of infection?
5. The principle scheme of treatment of thrombosis of the sigmoid sinus.
6. What diseases and not in the skull cavity can complicate the course of thrombosis of the sigmoid sinus?
7. Meningism. Its value in patients with acute inflammation of the middle ear.
8. Symptoms of otogenic purulent meningitis.
9. On the basis of what signs is the diagnosis of otogenic purulent meningitis made?
10. Differential diagnosis of otogenic and tuberculous meningitis.
11. Results of spinal puncture in otogenic and tuberculous meningitis.
12. What diseases of the middle ear are complicated by meningitis and what are the treatment tactics for them?
13. General scheme of treatment of otogenic meningitis.
14. In which parts of the brain are abscesses of ear origin?
15. Which wall of the middle ear should be destroyed if the infection penetrated from the middle ear into the middle or back cranial fossa?
16. Main symptoms of left temporal lobe abscess in right-handed people.

17. Characteristics of the main clinical periods in the course of a brain abscess.
18. Symptoms of cerebellar abscess.
19. How does cerebellar nystagmus differ from labyrinthine nystagmus?
20. Extradural and subdural abscesses, describe them.

Tasks

1. A patient with an exacerbation of chronic purulent frontoethmoiditis, complicated by a subdural abscess in the region of the anterior cranial fossa, entered the clinic. What are the surgical tactics for this rhinogenic complication?
A. a radical operation on additional sinuses, combining them with the nasal cavity
B. exposure of the dura mater of the anterior cranial fossa
C. frontoethmoidotomy with exposure of the dura mater of the anterior cranial fossa, puncture and dissection of the abscess through the operating cavity
D. radical surgery on the affected sinuses, suturing of the wound, removal of the abscess by neurosurgery
E. puncture of an abscess
2. One month after the acute purulent frontitis, the patient developed signs of an obvious stage of abscess of the frontal lobe of the brain. What is the rational surgical tactic for this pathology?
A. radical surgery on additional sinuses, their combination with the nasal cavity
B. exposure of the dura mater of the anterior cranial fossa
S. frontoethmoidotomy with exposure of the dura mater of the anterior cranial fossa, puncture and dissection of the abscess through the operating cavity
D. radical surgery on the affected sinuses, suturing of the wound, removal of the abscess by neurosurgery
E. puncture of an abscess
3. The patient squeezed out the furuncle of the nose. A few hours later, his body temperature rose, he developed a headache, swelling in the area of soft tissues of the nose, cheek, medial corner of the orbit, swelling of the eyelids. What symptoms do not indicate the transition of facial vein phlebitis to cavernous sinus thrombosis?
A. exophthalmos
B. chemosis
S. reduced vision or blindness
D. immobility of the eyeball
E. subfebrile constant temperature
4. A patient came to the clinic, who was diagnosed with acute purulent hemisinusitis, swelling of the upper eyelid 2 weeks after the flu. Outpatient oral antibiotic therapy is not effective. Which measure does not correspond to the adequacy of treatment?
A. puncture of the maxillary sinus
B. Trepanopuncture of the frontal sinus
S. adequate antibiotic therapy
D. antihistamines, diuretics
E. washing the nasal cavity by the method of displacement
5. The patient, against the background of an exacerbation of chronic purulent maxilloethmoiditis, suddenly had a high temperature, pain and infiltration in the area of the inferior medial corner of the orbit, swelling of the lower eyelid, restriction of the mobile eyeball, exophthalmos. What is the treatment strategy?
A. puncture of the maxillary sinus
B. only conservative treatment
S. maxillotomy operation
D. maxilloethmoidotomy operation with orbital tissue revision
E. washing the nasal cavity by the method of displacement
6. A patient with chronic purulent otitis media developed an abscess of the temporal lobe of the brain. What are the directions of spread of infection from the middle ear cavities to the contents of the skull?

7. Against the background of acute otitis media, the patient's temperature increased, headache, nausea, vomiting, meningeal signs, sensory amnesia, acalculia, and agraphia appeared. What diagnostic methods are most informative in this case?
8. A 5-year-old child suffered acute purulent otitis media about 3 weeks ago, was treated on an outpatient basis, and the condition improved slightly. Two days ago, the body temperature rose again, abundant pus appeared from the ear, pain in the area behind the ear. During the examination, the auricle is swollen, painful on palpation in the area of the mastoid process, under the infiltrated soft tissues, in this area - fluctuation. During otoscopy: an overhang of the back-upper wall of the bony part of the external auditory canal, the tympanic membrane is crimson, visible with effort. Creamy pus in the ear canal. What is the diagnosis?
9. A patient with chronic purulent epitympanitis, complicated by cholesteatoma, paresis of the facial nerve, came to the hospital. What is a rational treatment tactic?
10. The patient, against the background of an exacerbation of chronic purulent epitympanitis, suddenly developed hexic fever, general brain symptoms, pain in the back of the mastoid process and in the course of the jugular vein on the neck. What is the possible diagnosis?
11. A patient with chronic purulent otitis media began to complain of a severe headache, nausea, vomiting, and an increase in temperature up to 39ºC. During the objective examination, there are pronounced signs of acute purulent otitis media, tenderness of the mastoid process, positive meningeal signs. What are the doctor's tactical actions?
12. The patient developed an intracranial complication against the background of chronic purulent epitympanitis - an abscess of the temporal lobe of the brain. What kind of operation can be applied in this case?

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3. www.ama-assn.org – American Medical Association

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5. http://bma.org.uk– British Medical Association
6. www.gmc-uk.org- *General Medical Council* (*GMC*)
7. www.bundesaerztekammer.de – German Medical Association

Practical lesson No. 11

Topic: "Curation of the patient."

Purpose: to stimulate the independent work of students in performing the tasks of patient curation. Students are given the opportunity to demonstrate the knowledge, skills, and abilities they have acquired while studying the topics of previous otorhinolaryngology classes. To convey to students the norms of behavior and communication between a doctor and a patient - the basis for the formation of medical ethics, that is, the issue of duty, medical confidentiality and medical errors.

The student should know:

- etiology, pathogenesis, clinic, methods of treatment of basic nosological units of ENT diseases

The student should be able to:

1/ targeted collection of complaints and anamnestic data,
2/ external examination of the face, neck, ears
3/ palpation of the frontal walls of the sinuses, mastoid processes, cartilages of the larynx, lymph nodes
4/ endoscopic examination of ENT organs
5/ functional research of auditory and vestibular analyzers
6/ differential diagnosis and justification of the final diagnosis
7/ selection of rational tactics for the treatment of the disease and its complications

Basic concepts: The teacher supervises the students' activities in the performance of methods of examination of ENT organs:

1/ purposeful collection of complaints and anamnestic data,
2/ external examination of the face, neck, ears
With/palpation of the frontal walls of the sinuses, mastoid processes, cartilages of the larynx, lymph nodes
4/ endoscopic examination of ENT organs
5/ functional research of auditory and vestibular analyzers
6/ differential diagnosis and justification of the final diagnosis
7/ selection of rational tactics for the treatment of the disease and its complications

Equipment: tables, dummies, simulators, multimedia presentations on diseases of the ENT organs, work tables equipped with a tool for endoscopic examination of the ENT organs and conducting a functional study of auditory and vestibular analyzers.

Plan

I. Organizational moment (greetings, checking those present, announcing the topic, the purpose of the lesson, motivating students to study the topic). 7 min
II. Curation of patients. 38 min
2.1 Requirements for students' theoretical readiness to perform practical skills. 8 min
2.2 Examination of the patient with the teacher. 30 min
III. Objective examination of the patient 40 min
3.1 Interpretation of this examination of patient 20 min
3.2 Recommendations for writing medical history (professional algorithms, orienting maps for the formation of practical knowledge and skills, etc.). 15 min
3.3 Requirements for work results, including to registration 2 min
IV. Summing up. 5 min

CONTENTS OF THE LESSON

1 stage. Roll call Pays attention to the external examination of students.
2 stage. Announces the topic of the lesson, defines the practical significance of independent work, highlights the norms of communication between the doctor and the patient. Determines students' readiness for supervision.
3 stage. Provides methodical guidelines for the curation of patients. Each group of 2-3 people receives one patient for curation.

The performance of students' independent work is monitored by the teacher. Draws students' attention to the need for a clear description of rhinoscopic, otoscopic, pharyngoscopic, laryngoscopic pictures, both in the norm and with the definition of pathological changes. The teacher examines the patients and adjusts the special status.

4th stage. Provides consultations to students regarding diseases that require differential diagnosis. The teacher provides counseling to students according to treatment methods.

5th stage. It characterizes the activity of each student. Provides methodical instructions for writing a medical history and its defense.

Scheme of the medical history of an otorhinolaryngological patient

I. Title page.

1. Name of the university.
2. Department of Otorhinolaryngology.
3. Head of the department.
4. Head of curation.
5. Curator, course, faculty, group.
6. Surname, first name, patronymic of the patient.
7. Age.
8. Place of work and profession.
9. Date of hospitalization.
10. Time of curation of the patient.
11. Clinical diagnosis:

a) the main disease
b) complications
c) concomitant diseases

I. Complaints of the patient.

ear:

1. Hearing loss, its periodicity;
2. tinnitus, its intensity, frequency, periodicity, dependence on time of day, body position, etc.;
3. pain in the ears, its irradiation, predominant localization;
4. genetically from the ear, its nature (serous, serous-hemorrhagic, purulent, muco-purulent, admixture of crumbly masses, presence of smell)
5. Labyrinth symptoms: dizziness, nausea, vomiting, gait disturbance.

Nose:

1. nature of nasal breathing, frequency of its disturbance;
2. discharge from the nose, their nature (serous, mucous, purulent, amber-colored, with an admixture of blood, nosebleeds, the presence of an odor);
3. sense of smell (partial or complete loss, frequency of disappearance);
4. pain, their localization, irradiation;
5. sneezing (paroxysmal, sporadic).

pharynx:

1. pain, its localization (unilateral or bilateral), irradiation, dependence on food, swallowing saliva;
2. violation of swallowing, food flowing into the nose, sneezing;
3. the presence of ugliness (open, closed).

Larynx:

1. the presence of difficulty breathing (at rest, during physical exertion);
2. voice disorder (hoarseness, aphonia, their periodicity)
3. the presence of a cough (dry, with sputum discharge, its nature, blood impurities);
4. pain, its localization, irradiation.

esophagus:

1. pain, its nature, localization, relationship with swallowing;
2. violation of swallowing (liquid, thick food);

3. vomiting after eating, the nature of the vomitus (with an admixture of stomach contents, unchanged food, with an admixture of blood, etc.).

Violation of the function of other organs: the presence of a temperature reaction of the body (its nature, periodicity), headache, palpitations, disorder of the function of the gastrointestinal tract, genitourinary, endocrine, musculoskeletal systems, etc.

III. Medical history:

1. previous factors of the occurrence of the disease;
2. duration of the disease;
3. sequence of development of symptoms;
4. frequency of exacerbation of chronic diseases;
5. treatment carried out before and at the moment, its effectiveness.

IV. History of life:

1. previously transmitted infectious diseases (tuberculosis, malaria, Botkin's disease, venereal diseases, etc.);
2. concomitant diseases of internal organs;
3. heredity (diseases of parents and relatives);
4. occupational hazards (noise, vibration, dust, chemicals, radiation)
5. bad habits (smoking, alcoholism, drug addiction);
6. Allergological anamnesis (intolerance to medicines, food products).

V. Objective condition of the patient.

When describing this section, emphasis is placed on possible changes in the body associated with otolaryngological disease: the patient's general appearance, position in bed, physique, condition of the musculoskeletal system and skin, a detailed description of internal organs (chest and abdominal cavities).

VI. Research of ENT organs.

ear:

1. external examination and palpation: the presence of hyperemia, infiltration, fluctuations over the mastoid process and skin around the opening of the external auditory canal, soreness when palpating the areola, mastoid process;
2. otoscopy: contents of the external auditory canal; the condition of the skin of the auditory canal and the narrowing of its lumen (at the expense of which walls); a detailed description of the tympanic membranes - color, localization of scars, perforations (localization, shape, edges), condition of the mucous membrane of the tympanic cavity, the presence of secretions in it, cholesteatoma mass;
3. the results of sounding, diagnostic lavage of the attic (if there is a perforation of the tympanic membrane);
4. auditory passport;
5. data of audiometry, impedance measurement, research of hearing with stem evoked potential, etc.;
6. research of the vestibular apparatus: data of statokinetic, rotational, caloric, pressor tests;
7. data from X-ray examinations of temporal bones, CTG, MRI.

Nose:

1. external examination and palpation: determination of crepitation of bone fragments, soreness at the exit points of the branches of the trigeminal nerve, changes in the contours of the walls of the paranasal sinuses;
2. anterior rhinoscopy: the color of the mucous membrane of the nasal cavity, the presence of crusts, secretions in the nasal passages, the configuration of the turbinates, nasal septum, if necessary - a test with anemization of the mucous membrane;
3. study of the function of nasal breathing;
4. smell research;
5. evaluation of X-ray examination data of the external nose, paranasal sinuses;
6. puncture methods of researching paranasal sinuses: puncture of the maxillary sinus, trepanopuncture of the frontal sinus (performed with the teacher).

pharynx:

1. mesopharyngoscopy: color of the mucous membrane of the pharynx, the presence of edema, the condition of the soft palate, palatal arches, the back wall of the pharynx, the presence of lymphoid granules on it; the size and consistency of the palatine tonsils, the presence of pathological contents in the lacunae (rotation of the palatine tonsils), their fusion with the palatal brackets;
2. epipharyngoscopy (rear rhinoscopy): the size of the pharyngeal and tubal tonsils, the color of the mucous membrane, the pharyngeal mouths of the Eustachian tubes; the condition of the choana, the rear ends of the nasal concha, the presence of pathological discharge;
3. finger examination of the nasopharynx (if necessary): the size of the pharyngeal tonsil, its consistency, the presence of secretions, cicatricial changes of the mucous membrane in the area of the pharyngeal mouths of the Eustachian tubes;
4. determining the sensitivity of the mucous membrane of the pharynx, the presence of a pharyngeal reflex;
5. research of taste sensitivity.

Larynx:

1. palpation of the larynx: determination of its external contours, excursions, changes in the color of the skin, the presence of edema, emphysema, soreness, crepitation of the cartilages of the larynx;
2. indirect laryngoscopy and hypopharyngoscopy: the color of the mucous membrane, the condition of the vallecula, lingual tonsil, pyriform sinuses, the shape of the epiglottis, vestibular and true vocal folds, the area of the morganieva ventricle, the subglottic part of the larynx; the shape of the glottis, the mobility of the vocal folds;
3. direct laryngoscopy, microlaryngoscopy, laryngostroboscopy (if necessary);
4. X-ray data.

esophagus:

1. palpation of the cervical part of the esophagus: skin color, presence of pain, foci of infiltration, edema, crepitus;
2. X-ray examination data, including contrast;
3. esophagoscopy data (fibroesophagoscopy or using a rigid esophagoscope).

The condition of the regional lymphatic apparatus of the neck: the presence of enlarged lymph nodes, their localization, consistency, tenderness, mobility when displaced, multiplicity.

VII. Additional studies:

1. general tests of blood, urine, RW, blood glucose, if necessary - extended biochemical indicators;
2. fluorography of the chest cavity;
3. ECG;
4. histological examination data.

VIII. Preliminary diagnosis (without justification).

IX. Differential diagnosis

X. Final clinical diagnosis (with justification).

XI. Description of this disease: etiology, pathogenesis, clinical course, complications, treatment.

XII. Treatment takes care of the patient.

XII. Forecast.

XIV. References.

Curator's signature.

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Basic:

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Electronic information resources

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4. www.dec.gov.ua/mtd/home/ - State Expert Center of the Ministry of Health of Ukraine
5. http://bma.org.uk– British Medical Association
6. www.gmc-uk.org- *General Medical Council* (*GMC*)
7. www.bundesaerztekammer.de – German Medical Association

Practical lesson No. 12

Topic: " Acute tonsillitis and its complications.

Reason: One can often come across throat diseases in the clinical practice and any physician must diagnose them. Tonsillar pathology is a common medical problem which is interesting not only for otolaryngologists but for physicians, infectionists, reumatologists etc. Socially this disease is important due to a high rate of people suffering from tonsillitis who constitute a great working group of population.

Tonsillitis can give serious complications and provoke many other diseases, in particular the diseases of the cardiovascular system, responsible for the highest death rate.

Purpose: After the topic studying *a student must* have a clear understanding of the etiology and pathogenesis of throat diseases, the methods of surgical treatment.

He *must know* :

- classification of tonsillitis;
- the main clinical symptoms of tonsillitis,
- complications and the diseases caused by them;
- methods of conservative treatment, dispensary examination and prophylaxis,
- clinical manifestations of the other throat diseases.

He *must be able*:

- to make pharyngoscopy,
- to diagnose the throat diseases,
- make correct differential diagnosis of acute initial tonsillitis with infections deseases and pathology of the blood system.
- to recognize complications, choose the methods of treatment and carry out some diagnostical and medical manipulations.

Basic initial knowledge of anatomo-topographical features of the throat, the vascularization, methods of examination (epi-, hypo- and mesopharyngoscopy) are necessary to realize the aim of the lesson.

Equipment: tables, dummies, simulators, multimedia presentations, video films, tool sets, tuning forks, tomograms, radiographs, etc.

Plan

№№	The name of the composition of the class	Hour
I.	Organizational moment (greetings, checking those present, announcing the topic, the purpose of the lesson, motivating students to study the topic).	7
II.	Control of supporting topics.	38
2.1	Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units).	8
2.2	Questions (test tasks, problems, clinical situations) to check basic knowledge on the subject of the lesson.	30
III.	Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.).	40
3.1	Content of tasks (tasks, clinical situations, etc.).	20
3.2	Recommendations (instructions) for performing tasks (professional algorithms, orienting maps for the formation of practical skills and abilities, etc.).	3
3.3	Requirements for work results, including to registration	2
3.4	Control materials for the final stage of the lesson: problems, tasks, tests, etc. (if necessary).	15
IV.	Summing up.	5

The task for the self-control of the initial level of knowledge

1. Waldeyer's ring consists of which tonsils? A)
B) C) D)
2. Blood supply of the palatine tonsils is carried out by the ascending palatine artery?
3. Does the n. vagus innervate of the palatine tonsils?
4. What is between the tonsillar capsules and the wall of the pharynx?
5. What lymph nodes are responsible for lymphdrainage of the palatine tonsils?
A) B) C)
6. What anatomical formations are bounded by the lateral pharyngeal wall?

Standard answers for the task

1. A palatine; B nasopharyngeal; C tubarious; D lingual
2. True; 3. True; 4. Paratonsillar cellulose space – Porou's cellulose tissue; 5. A submandibular; B retromandibular fossae lymph nodes; C deep cervical along the jugular vein; 6.Nerv-vascular cervical bundle.

Control questions:

1. Classification tonsillitis.
2. Acute primary tonsillitis, ethiology and contributing factors.
3. Clinical forms, pathomorphological changes in tonsills.
4. Clinical picture of the various forms of tonsillitis.
5. Objective data at tonsillitis.
6. Differential diagnostics of tonsillitis with secondary inflammation of tonsils.
7. Treatment of acute tonsillitis.
8. Complication of tonsillitis, reason, way of distribution of an infection.
9. Peritonsillitis, ethiology, classification, principles of treatment, probable outcomes.
10. Retropharyngeal, peripharyngealabscesses,neck lymphadenitis, phlegmon of a neck. Ethiology, clinic, treatment.
11. Tonsillogenic sepsis, clinic, treatment.
12. Simanovsky-Vensan'stonsillitist (ulcero-membranous).
13. Acute secondary tonsillitis at infectious diseases (diphteria, scarlet fever, infectious mononucleosis, celiac typhus)
14. Acute secondary tonsillitis at diseases of blood (agranulocytosys, alimentary toxic aleukia, leukosis), principles of treatment.

INFORMATION BLOCK

Classification of tonsillitis by I.B.Soldatov (1975)

I. Acute:
1) Initial: superficial, lacunar, follicular, Vincent's tonsillitis.
2) Secondary: a) in acute infectious diseases, diphtheria, scarlet fever, tularemia, abdominal typhoid, infections mononucleosis
b) in blood vascular diseases- agranulocytosis, alimentary-toxicalaleukaemia, leukosis.
Chronic
1) Nonspecific:
a) compensative form
b) decompensative from
2)Specific: having infectious granulomatous-tuberculosis, syphilis, scleroma.

Acute tonsillitis is a general infectious disease in which the lymphoid tissue of the tonsils is affected by inflammation. In most cases the palatine tonsils are affected, while the other tonsils are involved less frequently.

Aetiology and pathogenesis. Among many microbes that can provoke acute tonsillitis (coccus, bacilli, viruses, spirochetae, fungi, etc.) the leading aetiological role belongs to beta-haemolytic streptococcus of group A. *Staphylococcus aureus* is another common causative agent of acute tonsillitis. Virological and clinical studies have shown that adenoviruses can also cause various forms of tonsillitis.

The exogenic factor attacks the tonsillar mucosa via airborne and alimentary route, and also by direct contact. Three main forms of the development of common acute tonsillitis are distinguished: (1) ocassional acute tonsillitis manifested as auto-infection due to impaired

environmental conditions, often as a result of chilling; (2) epidemic form arising as a result of infection from a tonsillitis patient; (3) exacerbation of chronic tonsillitis.

The commonly used classification includes the following forms: I-catarrhal; II-follicular; III-lacunar; IV-fibrinous; V-herpetic; VI-phlegmonous (intratonsillar abscess); VII-necrotic (gangrenous); and VIII-mixed forms.

*Clinical forms.***Acute catarrhal tonsillitis.** The pathological changes are characterized by pronounced dilatation of small blood and lymphatic vessels in the parenchyma of the tonsil, thrombosis of small veins, and stasis in the lymphatic capillaries. The onset is acute and is marked by dryness, burning and tickling in the throat; then swallowing becomes slightly painful. The patient complains of general indisposition, fatigue, and headache. The body temperature is usually subfebrile; insignificant inflammatory changes in the peripheral blood are found. Pharyngoscopy reveals diffuse hyperemia of the tonsils and the margins of the palatine arches; the tonsils are somewhat enlarged. The regional lymph nodes are often slightly enlarged. The clinical signs are more pronounced in children. The disease usually lasts 3-5 days. We must differentiate this form with ARVI.

Follicular tonsillitis. The disease usually begins with elevation of temperature to 38-39° C. The patient feels strong pain during swallowing. The pain radiates into the ear; salivation is often increased. More severe symptoms can develop in children: febrile temperature is often associated with vomiting; signs of meningism develop. The changes in the blood are often pronounced: neutrophilic leucocytes count from 12000 to 15000; moderate shift to the left and eosinophilia are observed; ESR is often 30-40 mm/h; traces of protein are found in the urine. As a rule, the regional lymph nodes are enlarged; their palpation is painful.

Pharyngoscopy reveals diffuse hyperaemia and infiltration of the soft palate and the arches; the tonsils are hyperaemic and enlarged, with numerous yellowish or yellowish-white spots (1 -3 mm) elevated over the surface. These formations are suppurating follicles. The disease lasts 5-7 days.

Lacunar tonsillitis. Lacunar tonsillitis usually runs a more severe course than follicular. Pharyngoscopic picture is characterized by enlargement of hyperaemic tonsils which are covered with islets of yellowish coat, first in lacunar orifices and then over the entire surface of the tonsils. Toxaemia is severe, and it is therefore necessary to monitor the cardiovascular and respiratory functions.

Fibrinous (fibrinomembranous) tonsillitis. Follicular or lacunar tonsillitis can sometimes develop like fibrinous tonsillitis when a membrane is formed from the ruptured purulent follicles. The fibrinous membrane spreads over onto the sites of necrotized epithelium in the lacunar orifices; it fuses with the adjacent sites of affection to form a confluent patch which can extend beyond the boundaries of the tonsils.

Table of Distinctive Symptoms of Diphtheria and Lacunar Tonsillitis

Symptoms	Tonsillitis	Diphtheria
Swollen tonsils	Less marked than in diphtheria, frequently it is bilateral	More severe, accompanied by edema of the palate arches, uvula and soft palate.May be unilateral
Patches	Spread within free areas	Extend beyond tonsils to palate arches, soft palate and posterior pharyngeal wall
Color of patches	Yellowish	White, grey -white, dirty-grey
Adherence of patches	Patches superficial and peel off easily	Patches deep, with necrosis of mucous; in typical cases strip off with difficulty to leave a bleeding surface

Pain on swallowing	Sharp	Not always marked
Regional lymph nodulus	Swollen, individual nodes easily palpated and extremely tender	Markedly swollen nodes on both sides from early days of disease, edema of subcutaneous tissue; flattened out contours of neck
Constitutional disturbance	Less severe than in diphtheria	Increasingly severe in toxic form
Fever	Within 39-40 °C	From subfebrile to 40 °C; more stable
Bacteriological examination	Negative (for Loeffler's bacilli)	Positive in most cases

Treatment. Rational treatment includes sparing conditions, local and general therapy. The patient must remain in bed during the first days of the disease and then abstain from physical work. The patient should be separated from the others; he should use separate dishes and other objects. In very severe cases the patient should be hospitalized. Food should be nutritious, rich in vitamins, soft, and not irritating. Treatment includes also gargling with a warm solution of sodium chloride or hydrocarbonate, furacin, potassium permanganate, calendula or camomile tea. A warming compress should be applied to the neck. Salicylates and antibacte-rial preparations should be used for general treatment.

The choice of antibacterial preparations depends on the gravity of the disease and the danger of complications. The antibiotic is administered usually for 5 days, which is, as a rule, sufficient to normalize body temperature and to improve the patient's condition. In order to eliminate reliably the infectious focus, it is necessary to continue the antibiotic therapy for another 3-5 days, or it is better to replace common bybicillin. If the patient is sensitive to penicillin, broad-spectrum antibiotics should be given in appropriate doses. Nystatin is given to patients to prevent candidiasis. If the course of acute tonsillitis is not aggravated by any factors, sulpha drugs are used instead of antibiotics. Desensitizing preparations such as suprastine, hysmanale, diazoline, etc. are recommended.

Phlegmonous tonsillitis. Intratonsillar abscess is a rare disease. It is associated with purulent destruction of a part of the tonsil. One side is usually involved. The affected tonsil is hyperaemic and enlarged. Its surface is tense; palpation is painful. *Treatment* includes opening of the abscess. Unilateral tonsillectomy is indicated for recurrent affections.

Herpangina. Viral tonsillitis is caused by adenoviruses. The causative agent of herpangina is type A Coxsackie virus. The disease is usually sporadic. The disease is highly contagious.The onset of herpangina is acute. The body temperature rises to 38-40°C, the patient complains of pain in the throat during swallowing, headache, and muscular pain in the abdomen. Vomiting and diarrhoea are also possible. Changes in the blood are moderate: slightly increased leucocyte counts, more often slight leucopenia, insignificant shift to the left. During the first hours of the disease diffuse hyperaemia of the pharyngeal mucosa can be revealed pharyngoscopically. Small reddish vesicles can be seen on the soft palate, tongue, palatine arches, and, less frequently, on the tonsils and the posterior wall of the pharynx.

Necrotic (ulcerous-necrotic) tonsillitis of Simanovsky-Vensana. Symbiosis of *Bacillus fusiformis* and *Spirochaetabuccalis* that is often found in the mouth of healthy people in the avirulent state is believed to be the pathogenic factor. The incidence of the disease is low and sporadic. The morphological changes are characterized by necrosis of the surface of one tonsil

with formation of an ulcer whose floor is covered with a loose fibrinous membrane underlied by necrotized lymphoid tissue.The patient complains of discomfort in the throat during swallowing, fetid breath and hypersalivation. The body temperature is usually normal. The leucocyte count moderately increases. The regional lymph nodes are enlarged on the involved side; they are moderately painful to palpation. Swallowing is usually painless. The disease lasts 1 to 3 weeks but can in some cases persist for several months.

Treatment consists in tending the mouth cavity, cleaning the ulcers from necrotized matter, gargling with disinfectant solutions. The surface of the ulcer is treated with an iodine tincture, silver nitrate or other solution, but neosalvarsan or novarsenol is believed to be the most effective. Novarsenol (0.3-0.4 g at 1-2-day intervals) and antibiotics should be injected intravenously in severe cases.

Lingual tonsillitis. Acute inflammation of the lingual tonsil is a relatively rare disease. The body temperature is febrile, swallowing is severely painful; speech is impaired. Protrusion of the tongue during its inspection and palpation of its root are very painful. Inspection with a laryngeal speculum reveals enlarged and hyperaemic lingual tonsil; punctate patches are sometimes formed. Oedema and stenosis of the larynx are dangerous complications. Treatment is the same as for other acute tonsillites. Abscesses should be opened surgically.

COMPLICATIONS OF TONSILLITIS

Peritonsillitis or Quinsy. Inflammation of the peritonsillar cellular tissue arises due to virulent infection spreading, usually from the palatine tonsil to the peritonsillar cellular tissue in the presence of predisposing local or general factors. In most cases, peritonsillitis is a complication of acute tonsillitis, foreign body or odontogenicethyology.

Symptoms. The development of the process has three stage: the oedema-infiltrative, purulent and reconvalescent stages. The process is usually unilateral. Tonsillogenicperitonsilites occur several days following a recurrent exacerbation of chronic or acute tonsillitis. A peritonsillar abscess can be found in the anterior or antero-superior (supratonsillar) part, between the tonsillar capsule and the upper part of the anterior palatine arch. The supratonsillar location of the abscess is most common. Posterior peritonsillitis (developing between the tonsil and the posterior arch) may cause oedema of the larynx. Peritonsillitis can also be inferior, with location of the focus between the inferior pole of the tonsil and the lateral pharyngeal wall, or lateral, occurring between the middle portion of the tonsil and the lateral wall of the pharynx. Lateral abscess runs the most severe course because of difficult spontaneous drainage.

The onset of the disease is manifested by severe pain during swallowing. The patient complains of headache and fatigue; the body temperature rises to febrile. Spontaneous pain in the throat becomes more intense, it radiates into the ear, teeth, and becomes so intense during swallowing that the patient refuses food and drinks. Trismus of the masticatory muscles develops. The speech becomes nasal and slurred. Inflammation of the pharyngeal muscles and also cervical lymphadenitis cause pain as the patient moves his head to one side. The leucocyte counts are 10-15 x 10^9 per 1; the blood count is shifted to the left; the erythrocyte sedimentation rate increases. Pharyngoscopy is difficult due to trismus: the mouth usually would open not wider than 2-3 cm. Anterosuperior and anterior peritonsillites are characterized by marked protrusion of the upper pole of the tonsil together with the palatine arches and the soft palate toward the median line. Half of the soft palate, together with the superior tonsillar pole and the upper part of the arches form a sphere whose surface is tense and hyperaemic; the uvula is moved to the opposite side, the tonsil is displaced posteriorly and inferiorly. The tongue is covered with a thick coat, the saliva is tenacious. Fluctuation is observed in the region of the strongest protrusion; the abscess opens at this point, often through the supratonsillar recess or the anterior arch.

*Treatment.*The patient must be hospitalized, bed rest is obligatory. Antibacterial therapy is indicated for all stages of peritonsillitis. Antibiotics are injected intramuscularly. As soon as the abscess is ripe (the 3rd or 4th day) it should be opened surgically, without waiting for its spontaneous rupture. The abscess is usually incised without any anaesthesia, or after spraying over the pharynx with a 10 per cent lidocaine or a 2 per cent dicaine solution. The incision should be done at the most prominent site. A dull tool, e. g. a bulbed probe or a packer, is often used to open the abscess, although this method is more painful . Tonsillectomy is indicated in

cases when the opening of abscess is impossible (lateral peritonsillitis), abortive attempt to open the abscess, persistent course of the disease, and in the presence of signs of complications, such as sepsis, pharyngeal abscess, phlegmon of the neck, and mediastinitis.

Retropharyngeal abscess. This is a purulent inflammation of the lymph nodes and loose connective tissue found between the fascia of the pharyngeal muscles and the prevertebral fascia. The disease occurs almost exclusively in children because the lymph nodes and the loose connective tissue in this region are well developed up to the age of 4, after which they undergo involution.

The first symptoms are usually pain in the throat during swallowing and impeded respiration. The child refuses food, becomes restless and often cries; sleep is deranged. The temperature rises to 38-39° C. If the abscess is found in the nasopharynx, respiration through the nose becomes difficult, speech is nasal and the voice timbre dull. If the abscess is located in the mesopharynx, a pharyngeal stridor can develop. The voice becomes hoarse and respiration noisy. If the abscess extends onto the inferior parts of the pharynx, asphyxia and cyanosis develop. The entrance to the larynx can be constricted, and the oesophagus and the trachea compressed. The reaction of the regional lymph nodes is usually pronounced; they swell and become tender so that the child has to hold his head in a forced position. Pharyngoscopy reveals bulging and hyperaemic mucosa; the affection is often asymmetric so that only one half of the posterior pharyngeal wall is involved.

The blood reacts to the inflammation: the leucocyte counts increase to 10-15 x 10^9 per 1; the blood count shifts to the left; the erythrocyte sedimentation rate accelerates to 40-50 mm/h. The disease lasts 5-6 days or sometimes longer.

Treatment should be conservative until the abscess develops. Antibiotics and sulpha drugs are prescribed. When an abscess develops, it should immediately be opened; measures should be taken to prevent aspiration of pus. This can be attained by preliminary suction of pus during puncture; the abscess should preferably be opened on a half-lying patient .

Peripharyngeal abscess develops due to various causes, such as extention of infection to the cellular tissue of the peripharyngeal space during acute tonsillitis, often during peritonsillitis; possible injury to the pharyngeal mucosa; purulent discharge from the mastoid process through the incisuramastoidea and the pharyngo-maxillary space.

Symptoms. The patient experiences severe pain during swallowing (the mouth opens with great difficulty). The head is inclined to the involved side; respiration can be difficult. The body temperature is usually elevated, the general condition bad.The leucocyte counts are 12-14 x 10^9 per 1, the erythrocyte sedimentation rate 45-50 mm/h. Inspection reveals infiltration of the sub- and retromandibular region. Fluctuation is sometimes revealed during palpation of the swelling.

Treatment at the initial stage of peripharyngitis includes intravenous injections of big doses of antibiotics, dehydratation, desensetivemedisine. Ripe abscess should be opened surgically. There are two approaches : external, by the anterior margin of the stemocleidomastoid muscle, and through the oropharynx.

AFFECTIONS OF THE PHARYNX IN SYSTEMIC DISEASES

Infectious mononucleosis. This infectious disease is probably caused by a special lymphotropic virus which occurs together with *Listerella* genus. It is believed that infection occurs by air-borne droplets or by contact; the nasal cavity and the pharynx are the portals of infection. Children and the young usually develop mononucleosis. The disease is characterized by a fever, tonsillitis-like changes in the fauces, adenosplenomegaly, and changes in the blood (high counts of leukocytes and atypical monocytes). The incubation period lasts 4-5 days (sometimes 10 days). At the onset of the disease the body temperature rises to 38-40° C and persists at this level from 5 days to 2-4 weeks (for longer periods in rare cases). The symptoms are sometimes alleviated periodically during this stage. An early and permanent sign of the disease is enlarged lymph nodes, first on the neck and then in the groin, armpits, and the abdomen. The spleen and the liver are also enlarged in most patients. Changes in the fauces usually follow the enlargement of the lymph nodes; they are similar to those occurring in catarrhal, lacunar, fibrinous, and less frequently necrotic tonsillitis.

The most characteristic symptom of the disease is a moderate leucocytosis with a predominance

of mononuclear cells, which may number 50 to 90 per cent of the total leukocytes, a great number of altered monocytes .
Treatment. Bed rest and high-calorie diet rich in vitamins are prescribed. Antibacterial preparations prevent secondary infection; the causative agent is insensitive to them. Gargling with disinfectant or astringent solutions is useful. Necrotized areas are treated with a 10 per cent silver nitrate solution. General light (UV) treatment is recommended.
Agranulocytosis (agranulocytic angina). Affection of the tonsils is the specific symptom of this disease. Agranulocytosis is considered not as an independent nosological disease but as a response of the haemopoietic system to various pathological factors (such as infection, toxicosis, radiant energy) or as a result of altered haemopoiesis in systemic diseases of the blood. Agranulocytosis occurs mostly in women; it is a rare disease affecting mostly adults.
Symptoms. The prodromal period is characterized by indisposition; it lasts 1-2 days. Fulminant, acute, and subacute forms of agranulocytosis are distinguished. In the former two cases the disease begins with high temperature (to 40° C), chills, and bad general condition. Necrotic and ulcerative changes in the pharynx, mainly in the region of the palatine tonsils, occur simultaneously. Necrosis often spreads onto the mucous of the pharynx, gums, and the larynx. In rare cases, the destructive changes occur in the intestine and the urinary bladder. Necrosis can extend onto deep underlying soft tissues and bones.
The blood is characterized by a very low count of polymorphonuclear leukocytes, or they can be absent.
Treatment is aimed at activizing the haemopoietic system and controlling secondary infection. Exeption of all medicines that can cause agranulocytosis (amidopyrine, sulphanilamide, salvarsan, etc.). Blood transfusion, antibioticotherapy, hormone preparations and other means of treating agranulocytosis are prescribed. The diet should be sparing; the patient must gargle the throat with antiseptic solutions; the necrotized matter should be removed.
Septic angina (alimentary toxic aleukia). The onset of this disease is marked by a sudden fever of 39° to 40 °C, inflammatory and necrotic signs in the throat, petechial eruptions and severe hemorrhage from the nose and mouth.
The anginal stage is not the onset of the disease and follows food intoxication that has been in progress for one to three weeks without any significant signs.
The disease is caused by cereal food such as millet, wheat, rye, barley, buckwheat, and oats, that had been left out in the field during the winter.
Ingestion of this grain, in particular millet, will cause a bitter taste and a burning sensation in the mouth, pharynx, esophagus and stomach, as well as numbness in the tongue. These symptoms are often accompanied by nausea, vomiting, and headache. Yet in other cases, the absorption of this food for only two or three weeks is followed by headache, prostration and weakness. Punctate hemorrhage looking like flea bites appears on the skin. Already at this early period of septic angina, blood analysis will reveal a progressive reduction in the leukocyte count, viz., onset of the period of leukopenia. The whitish or yellowish-brown membrane which appears on the tonsils marks the onset of necrosis which soon, in fact in 24 hours, causes deep ulcers . This ulceration commonly affects not only the tonsils which soon collapse completely but other aggregations of lymphadenoid tissue as well, and may extend to the palatine, pharyngeal and esophageal mucosa and, sometimes, to that of the oral cavity.
Withdrawal of toxic products from food at the initial period of the disease, prior to the onset of anginalsymptomps, may often bring recovery, especially if the total amount of toxic food eaten has been moderate. Advanced septic angina is frequently fatal.
Treatment. At the first signs of the disease, toxic products should be immediately withdrawn from food, and lavage of the stomach undertaken. The patient is then given large doses of magnesium sulfate or sodium sulfate to cleanse the stomach of toxic food residue. The diet must be nourishing and rich in proteins and vitamins, and drink must be given in plenty to help expel toxins from the body. Local treatment, apart from the use of gargles, and anesthetic ointments, is by sprinkling the ulcerated surfaces with streptocide or sulfadimezin powders twice daily.Intramuscularantibiotics injections have been used with success.
<u>Carry out self-control</u> of got knowledge with the help of the next task

1.Factors of acute inflammation in palatine tonsils.
1 localization on the respiration and digestive system tracts
2 dental caries, paradontosis
3 chronic tonsillitis
4 presence in internal epithelial passage in palatine tonsils
2. The treatment of tonsillitis is:
A) desensibilization
B) antibiotics
C) prescribing of corticosteroid medicine
D) throat gargle with antiseptics
E) vitamin therapy
3. The formsperitonsillar abscess are:
A anterior and anterior-superior
B posterior
C exterior
D superior
E inferior
4. Classification of acute paratonsillitis according to clinical duration
1 acute
2 subacute
3 chronic
4 recurrence
5. Subjective symptoms of acute paratonsillitis
1 one side unbearable pain in pharynx
2 weakness, indisposition, increasing of temperature and symptoms of intoxication
3 increasing of salivation, refusing from meal
4 forced position of the head
6. In acute paratonsilar abscess carry out
A opening of abscess
B tonsillectomy
C both of the above
D none of the above
7. Clinical symptom retropharyngeal abscess:
8. Clinical symptom parapharyngeal abscess:
A. hyperemia of the mucous membrane of the pharynx posterior wall with purulent follicles
B protrusion, hyperemia of the pharynx posterior wall, difficult at swallowing,, nasal speech
C swelling, diversion lateral wall of pharynx and exterior surface of neck
D narrowing of the pharynx, increasing of lymph nodes
E hyperemia, infiltration, one side diversion of palate tonsil
9. Retropharyngeal abscess develops at the children till 5 years
A true
B false
10. Method of lancing parapharyngeal abscess.
1 tonsillectomy and opening of the abscess through the tonsillar recess
2 dressing of external carotid artery, external entrance to abscess
3 opening by external entrance
4 opening of external entrance and tonsillectomy
11. Etiological factor of tonsillitis of Simanovsky-Vensan.
12. Etiological factor of alimentary toxic aleukia.
A symbiosis of spindle shape bacilli and spirochete of month cavity
B filtrate viruses
C both of the above
D none of the above
13. Point the morphologic peculiarities in agranulocytosis.

1 tonsillitis
2 leucopenia
3 neutropenia
4 thrombocytopenia

14. Treatment in agranulocytosis

A blood transfusion, erythrocytic, thrombocytic and leucocytic masses
B stimulatingerythropoesis medicine
C analgetics
D antibiotics
E corticosteroid therapy

15.Changes of morphological properties of blood during infectious mononucleosis.

1 leucocytosis
2 relative lymphocytosis, monocytosis
3 appearance of non specific mononuclear cells in blood
4 neutrophilia

16. The characteristic of patches in lacunar tonsillitis
17. The characteristic of patches in diphteria

A removed with difficult, bleeding surface in these place
B easily removed without ulceration
C both of the above
D none of the above

18. Which method can confirms the diagnosis of diphteria of ENT organs.

1 epidemiological observations
2 clinical picture
3 bacteriological investigations of nasal, pharynx and larynx contents
4 analysis of blood and urine.

Task 1. Patient of 17 years complains of a strong pain in a throat amplifying at swallowing, the increase of temperature of a body, general indisposition, headache, absence of appetite . Was ill three days back after overcooling. Objectively: skin covers damp. Temperature of a body 38,8° Ñ.The pulse 88 in minute, rhythmical.Bright hyperemia of a mucous of palate arches, tonsils and back wall throat. On a surface of tonsils are white patches, which are easily removed. Submandibular lymph nodes are increased, painful at palpation. What diagnosis? How to treat the patient?

Task 2. For what day from a beginning of disease at peritonsillar abscess its opening is made? How the place of opening is determined, if is not present of local protruding inperitonsillar area?

Task 3. The patient 16 years complains of general indisposition, headache, pain in a throat. The second day is sick. Objectively: a condition of the patient is bad. Skin is pale, damp. Temperature of a body 38,6° C, pulse 82 in minute. A mucous of the throat is red with a grey shade, tonsils are covered with dirty grey patches, which are spread on the palatine arches. Patches are removed difficulty, the underlying tissue bleeds. Soft tissues in a circle of tonsils are edematous. The smell from a mouth is determined. In submandibular area the swelled soft tissue is defined . Regional lymph nodes are not increased. What diagnosis? What is necessary for confirming of the diagnosis? What tactics of the doctor?

The answers to tasks:

1. 1,2,3; 2.A,B,D,E; 3. A,B,C,D,E; 4. 1,2,3,4; 5. 1,2,3,4; 6.C; 7.B; 8.C; 9.A; 10. 1,3; 11.A; 12.D; 13. 1,2,3; 14. A,B,C,D,E; 15.1,2,3; 16.B; 17.A; 18. 1,2,3.

Task 1.Lacunar tonsillitis.Anti-inflammatory treatment, desensibilisation, vitamins.Plentiful drinking, sparing diet, bed regime.Gargling by antiseptics.

Task 2. Opening of the abscess is made for the third day. The place of opening is in middle third of line connecting the basis of the uvula and posterior tooth of the mandibula.

Task 3.Diphteria of the pharynx. For the diagnosis it is necessary to make bacteriological research. The urgent hospitalization of the patient to infectious hospital is indicated.

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Electronic information resources

1. World Health Organization. URL: www.who.int/ru/index.html.
2. European Regional Office of the World Health Organization. URL: www.euro.who.int.
3. www.ama-assn.org – American Medical Association
4. www.dec.gov.ua/mtd/home/ - State Expert Center of the Ministry of Health of Ukraine
5. http://bma.org.uk– British Medical Association
6. www.gmc-uk.org- *General Medical Council* (*GMC*)
7. www.bundesaerztekammer.de – German Medical Association

Practical lesson No. 13

Topic: "Chronic inflammatory diseases of the pharynx and their complications"

Purpose: study of etiology, pathogenesis, clinic and methods of treatment of chronic inflammatory diseases of the pharynx and their complications. Analyze the classification, etiology, pathogenesis, clinical manifestations and methods of their treatment. To acquaint students with the priority research of the Ukrainian School of Otorhinolaryngology on the problem of immunology of the lymphadenoid pharyngeal ring, diagnostics, methods of treatment of chronic tonsillitis and their complications. To acquaint students with the existing classifications of chronic inflammation of the palatine tonsils;

The student should know:

- modern ideas about the etiology, pathogenesis, features of the clinic of chronic tonsillitis;
- classification of tonsillitis according to I. B. Soldatov
- conservative methods of treatment of chronic tonsillitis, indications for surgical intervention — tonsillectomy.
- the main symptoms of hypertrophy of the palatine and pharyngeal tonsils, methods of treatment of these patients

Be able:

- Correctly collect the anamnesis of the patients and highlight the main complaints characteristic of chronic tonsillitis, hypertrophy of the palatine and pharyngeal tonsils,
- perform oropharyngoscopy, hypopharyngoscopy;
- have an idea of the finger and fiberscopic method of examining the nasopharynx in children;
- evaluate objective signs of inflammatory processes, including local signs of chronic tonsillitis;
- palpate regional lymph nodes;
- prescribe appropriate treatment for these diseases, draw up a treatment scheme for patients with chronic tonsillitis;
- culture from the mucous membrane of the pharynx;
- carry out lubrication, irrigation and insufflation of the pharynx with medicinal substances;
- wash tonsil lacunae.

Basic concepts: In practice, doctors often encounter chronic diseases of the pharynx. Chronic tonsillitis (in adults it is 4-10%, and in children - 12-15%) can also cause serious complications, namely: rheumatism, infectious non-specific polyarthritis, endocarditis, acute and chronic nephritis, cholecystitis, thyrotoxicosis, etc. In children aged 2 to 12 years, hypertrophy of the pharyngeal tonsils is observed in 10-30% of cases, which leads not only to impaired nasal breathing and speech, but also to the development of acute and chronic purulent otitis media, malocclusion, and formation of the facial skeleton. Knowledge of the clinic, diagnosis and principles of treatment of these diseases is necessary in the work of a doctor.

Equipment: tables, dummies, simulators, multimedia presentations, video films, tool sets, tuning forks, tomograms, radiographs, etc.

Plan

№№	The name of the composition of the class	Hour
I.	Organizational moment (greetings, checking those present, announcing the topic, the purpose of the lesson, motivating students to study the topic).	7
II.	Control of supporting topics.	38
2.1	Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units).	8
2.2	Questions (test tasks, problems, clinical situations) to check basic knowledge on the subject of the lesson.	30
III.	Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.).	40
3.1	Content of tasks (tasks, clinical situations, etc.).	20

3.2	Recommendations (instructions) for performing tasks (professional algorithms, orienting maps for the formation of practical skills and abilities, etc.).	3
3.3	Requirements for work results, including to registration	2
3.4	Control materials for the final stage of the lesson: problems, tasks, tests, etc. (if necessary).	15
IV.	Summing up.	5

Questions, tasks and tests to determine the entry level of knowledge:

Question:

1. Classification of tonsillitis;
2. Etiology and pathogenesis of chronic tonsillitis, local signs of chronic tonsillitis, formulation of the diagnosis of chronic tonsillitis;
3. Conservative and surgical methods of treatment of patients with chronic tonsillitis;
4. Indications for tonsillectomy;
5. Prevention of chronic tonsillitis;
6. Hypertrophy of palatine tonsils: clinic, diagnosis and treatment;
7. Hypertrophy of the pharyngeal tonsil: clinic, diagnosis and treatment

Tests:

1. Data on examination of the pharynx in pharyngomycosis:

A. the mucous membrane of the pharynx, the back wall of the pharynx is pale pink, shiny
V. hyperemia, swelling of the mucous membrane of the back wall of the pharynx
S. on the palatine, lingual tonsils, lateral ridges and on the back wall of the pharynx - white pointed plugs
D. hypertrophy of lateral rollers
The correct answer is S.

2. Radical methods of treatment of pharyngomycosis:

A. antifungal therapy
B. lubrication of foci of hyperkeratosis of tonsils and pharynx with Lugol's solution on glycerin, 2% iodine solution
C. electrocoagulation of each area of hyperkeratosis
B. removal of foci of hyperkeratosis (thorns)
D. cryodia on the affected areas of the mucous membrane
The correct answer is B

3. The following types of paratonsillar abscess are distinguished, with the exception of:

A. front and front-upper
V. back and back-upper
S. external
D. posterior-lower
E. lower
The correct answer is D.

4. Pathological changes in the pharynx with paratonsillar abscess, except for one:

A. unilateral hyperemia, infiltration and swelling of the palate
B. moving the affected tonsil forward and towards the middle line, pushing the tongue to the healthy side
S. protrusion, fluctuation and thinning of the soft palate on the side of the impression
D. increase and appearance of palatine tonsil ulcers
The correct answer is D.

5. Subjective symptoms of acute paratonsillitis, except:

A. unilateral spontaneous pain in the pharynx

B. Weakness, loss of working capacity, fever and other symptoms of intoxication
S. increased salivation, anorexia, swallowing disorders
D. forced position
The correct answer is D

6. .List the leading symptoms in the clinic of paratonsillar abscess, except for one:
A. sharp hyperemia, infiltration, unilateral protrusion of the palatine tonsil together with brackets, trismus
B. bulging and swelling of the palatine tonsils, covered with gray plaque that extends beyond the arch, absence of trismus
S. unpleasant smell from their mouth
D. pain in the lymph nodes of the neck
E. high temperature, snotty voice
The correct answer is B.

Lesson content.
Chronic inflammatory diseases of the pharynx include such diseases as chronic pharyngitis, pharyngomycosis (leptotrichosis), adenoids and chronic adenoiditis, chronic tonsillitis.

CHRONIC PHARYNGITIS
Chronic pharyngitis is a long-term diffuse inflammation of the mucous membrane of the pharynx, which occurs mainly without general manifestations.
Chronic pharyngitis occurs, as a rule, in adults, more often in men. Individual inclination is important in its development. Chronic pharyngitis often occurs in patients with diseases of the cardiovascular system, kidneys, digestive organs, as well as against the background of anemia (anemia), diabetes, etc. Other causes: violation of nasal breathing (curvature of the nasal septum, adenoids), infection (its source is the nose and paranasal sinuses, teeth or bronchi in case of their damage), non-infectious factors (steam, gases, dust, hot dry air, functional overload pharynx: prolonged cough, incorrect setting of the singing voice, etc.).
Clinic
Patients complain of:
1. Sensation of dryness in the throat.
2. Sensation of a "lump" in the throat.
3. "Sticky" cough, especially in the morning.
4. Unpleasant sensations with an "empty" mouthful.
5. Forced coughing or coughing.
6. With a strong cough, there may be small bleeding (impurities of blood in sputum).
The following forms of chronic pharyngitis are distinguished: catarrhal, hypertrophic and atrophic.
The catarrhal form is the lightest, manifested by scratching and feeling of a foreign body in the pharynx, excessive discharge of secretions, which must be constantly expectorated.
Oropharyngoscopy
• The disease is manifested by reddening of the mucous membrane of the back wall of the pharynx, the appearance of a viscous secretion.
• On the hyperemic mucous membrane of the back wall of the pharynx, there is a pronounced vascular pattern and reddened lymphatic follicles 1-3 mm in size.
The hypertrophic form includes lateral and granulosa pharyngitis. It is characterized by hyperplasia, hyperemia, lymphocytic infiltration, swelling, growth of connective tissue in the mucous membrane of the pharynx.
Oropharyngoscopy
• The disease is manifested by thickening, redness of the mucous membrane, the appearance of a viscous secretion; an increase in the pharyngeal reflex is often observed.
• In case of lateral pharyngitis, the lateral ridges located behind the posterior palatine arches become thickened, sausage-like, and spread into the nasal and laryngeal parts of the pharynx.
With granulosa pharyngitis, reddened lymphatic follicles are detected on the back wall of the pharynx,

the size of which reaches 4-7 mm.
Atrophic (dry) form. As a result of chronic inflammation, metaplasia of the epithelium (cornification), atrophy of glands and lymphoid tissue occur.
Oropharyngoscopy
The mucous membrane of the back wall of the pharynx is smooth, thinned, dry, often shiny, covered with a small amount of yellow-green purulent plaque. Such changes can also occur in the larynx. Elderly patients with symptoms of chronic pharyngitis should be aware of the possibility of a tumor of the nasal and laryngeal parts of the pharynx or the root of the tongue. Such patients must be examined by an otorhinolaryngologist.
Treatment
If possible, the causes that led to the development of the disease should be eliminated: restore nasal breathing (remove the curved nasal septum, perform an adenotomy, etc.); remediate foci of infection that provoke the development of pharyngitis (remediation of the oral cavity, nose, and paranasal sinuses). When diseases of internal organs that could support pharyngitis are detected, treat them. Local treatment depends on the form of pharyngitis.
In catarrhal and hypertrophic forms, rinsing with a 1-2% solution of baking soda and table salt, St. John's wort tincture (1 teaspoon per 1 glass of water) is used: Lugol's solution, iodinol are used for lubrication. Phonophoresis of propolis, inhalation of 1% decaris solution are also prescribed. Separate accumulations of granules are cauterized with a 40% solution of trichloroacetic acid, cut with a conchotome, galvanocaustic, cryodestruction or laser coagulation is performed.
In the atrophic form of chronic pharyngitis, a 1% solution of iodinol, bicarmint (2 tablets per 1 glass of water) is used for rinsing or applications. Lubricate the throat with an alcohol-glycerin solution of propolis. A 3% solution of potassium iodide is prescribed inside (1 tablespoon in milk 3 times a day). In addition, patients are advised to drink alkaline mineral water, parenteral administration of aloe extract, FIBS, etc., electrophoresis of 0.5% nicotinic acid solution (15-20 sessions, one per day). In the presence of crusts on the mucous membrane of the pharynx, inhalation of proteolytic enzymes (trypsin, chymotrypsin), 1% solution of nicotinic acid, 2% solution of potassium iodide, lubrication of the back wall of the pharynx with oil solutions for 6-10 days (fish oil, peach oil). It is possible to recommend sanatorium-resort treatment to patients in a warm, humid climate.

CHRONIC TONSILLITIS

Inflammation of the palatine tonsils prevails among chronic inflammations of the other tonsils of the lymphoid pharyngeal ring. Chronic tonsillitis is infectious-allergic diseases of human body. According to some authors, the incidence of chronic tonsillitis is 4-10 per cent among adult population and 12-15 per cent among children.

The factors predisposing the onset of chronic tonsillitis are the anatomo-topographic properties of the tonsils (the presence of crypts, and some others) and their histological properties, the presence of microflora in the lacunae and conditions favorable for its cultivation, and disordered biological and protective-adaptation mechanisms in the tonsil tissue.

In chronic tonsillitis the flora is not polymorphous in deep parts of the lacunae. Monoflora is usually found: various forms of streptococci (especially of haemolytic staphylococcus), adenoviruses (mostly in children), and others. Chronic tonsillitis should be regarded as an infectious disease caused mostly by autoinfection.

Chronic tonsillitis is usually secondary to acute tonsillitis. Acute inflammation of the tonsillar tissue is not followed by complete resolution; it continues and turns into a chronic form. In rare cases chronic tonsillitis can develop without preceding acute inflammation.Permanent autoinfection from chronic foci such as carious teeth, chronic inflammation in the nasal cavity and the paranasal sinuses, or in the pharynx, and also bacterial and local tissue and general autoallergy provoke the onset of chronic tonsillitis.

The pathological inflammatory changes are localized in the epithelial coat of the fauces and in the walls of the tonsillar lacunae, in their parenchyma and stroma, and also in the peritonsillar connective tissue. The squamous epithelium of the crypts comes off in scales to form fetid caseous masses plugging the crypts and containing numerous bacteria and leukocytes. Owing to the expansion of the crypts the tonsils appear porous and spongy, and the faucial pillars often adhere to the free surface of the tonsils. The crypts become a most convinient place for the retention and propagation of

virulent streptococci and staphylococci whose vital activity keeps up the inflammatory process in the tonsils. In unfavourable conditions, like chilling or reduced body resistance, etc., these bacteria may cause exacerbations, such as acute tonsillitis, peritonsillar abscess and a number of general complications, for example, infectious polyarthritis, rheumatic heart, nephritis, etc.

Symptoms and clinical classification of chronic tonsillitis. Frequently recurring acute tonsillitis in the anamnesis is the most reliable evidence of chronic tonsillitis. According to various authors, chronic tonsillitis can develop without preceding acute tonsillitis in about 2-4 per cent of cases. The diagnosis should be based on the assessment of all symptoms taken together because each separate sign can be caused by some other disease of the pharynx, teeth, jaws, nose, etc. Chronic tonsillitis cannot be diagnosed during exacerbation because all pharyngoscopic symptoms will characterize acute rather than chronic tonsillitis. Only 2-4 weeks after exacerbation it is possible to assess the objective signs of chronic inflammation of the palatine tonsils.

Chronic tonsillitis would be usually exacerbated 2 or 3 times a year, but acute tonsillitis can also occur 5 and 6 times during one year. In some patients chronic tonsillitis is exacerbated once or twice in the course of 3 or 4 years, but this recurrence should also be considered frequent.

The complaints of the patients are frequently recurring acute inflammation of the tonsils, unpleasant breath, discomfort and feeling of a foreign body in the throat during swallowing, dryness and prickling. The patient often complains of fatigue, flaccidity, headache, decreased working capacity, the temperature is often subfebrile. For many patients, sore throat in the anamnesis is the only complaint.

Inspection of the tonsils and the surrounding tissues reveals ridge-like thickening in the margins of the anterior and posterior palatine arches, their oedema, especially of the upper parts, hyperaemic margins of the palatine arches, often their adhesion to the tonsils and the triangular fold.

The tonsils of most adults with chronic tonsillitis are small, in children they are enlarged, but hyperplasia of the lymphoid tissue of the pharynx (of the palatine tonsils included) is considered normal for children. The surface of chronically inflamed tonsils can be loose, especially in children; but in most cases the tonsils remain smooth. The presence of fetid caseous matter or purulent plugs in the tonsillar lacunae is an important and most common sign of chronic tonsillitis. The lacunar contents are usually taken for diagnostic studies by expressing with a spatula. A common local sign of chronic tonsillitis is enlargement of the regional lymph nodes: upper deep cervical, those located by the anterior edge of the sternocleidomastoid muscle.

The classification of chronical tonsillitis was accepted by 7-th Conference of Specialist in USSR in 1975 and recommended by Health Ministry of USSR in 1979. Classification of tonsillitis of Academic E.B.Soldatov tracts them as following form. In first compensatory form there are only local symptoms of chronic inflammation of tonsils. General reaction of organism doesn't occurs due to sufficient barrier of tonsils and resistance of human body. Second decompensatory form is characterized by disturbance of tosilla function in form of residual tonsillitis, paratonsillitis, paratonsillary abscess, different pathological reactions, diseases of other organs and systems. In the formulation of diagnosis in decompensation condition precise form of decompensation are indicated. Examples of formulating diagnosis: chronic tonsillitis, compensatory type; chronic tonsillitis, decompensatory type (residual tonsillitis, rheumatism).

Classification of Preobrazensky-Palchun: The *simple form* of chronic tonsillitis is characterized by the above described symptoms in the absence of toxaemia or allergic reaction of the body associated with the chronic process in the palatine tonsils. Chronic tonsillitis in its simple form does not impair the general condition of the patient between exacerbations. The *toxicoallergic form, first stage* is diagnosed by the same criteria as the simple form, and also by the symptoms of toxaemia and allergization: periodical elevation of temperature during acute tonsillitis, increasing fatigue and decreasing working capacity, periodic pain in the joints and the heart, functional disorders of the nervous, renal and other systems. The concomitance diseases may occur. Chronic tonsillitis often concurs with diseases of different aetiology which are, however, related to it through common reaction of the body. Essential hypertension, hyperthyroidism or diabetes mellitus can concur with chronic tonsillitis. In the presence of a concomitance disease, chronic tonsillitis can be simple or toxico-allergic, first stage. The *second stage* is characterized by organic changes of internal organs and system and their conjugate diseases. Conjugate of systemic diseases with chronic tonsillitis is

established by the presence of the same aetiology, including the aetiology of exacerbations. For example, streptococcus or other microbe is known to be an aetiological factor for chronic tonsillitis and rheumatism (as well as for nephritis, infectious polyarthritis, etc.). In this concomitance, the connection between the diseases is manifested by periodic or constant direct effect of one disease on the other, especially during exacerbations. This phenomenon determines the physician's tactics in the treatment of chronic tonsillitis in the presence of conjugate chronic infections.

The course of conjugate diseases is aggravated by the presence of chronic infectious foci in the tonsils, but the pathogenetic connections here are realized through the general reaction of the body.

Treatment. Treatment of chronic tonsillitis depends on its form. Simple chronic tonsillitis is as a rule managed conservatively, and only if this treatment proves ineffective in 3-4 courses, the tonsils should be removed.

The toxico-allergic form should be treated surgically, but the first degree of this disease can also be treated conservatively (1-2 courses). If treatment is not sufficiently effective, tonsillectomy is indicated. Toxico-allergic symptoms of the second degree are direct indications for tonsillectomy. If this operation is contraindicated (e.g. in the presence of haemophilia), cryotherapy with liquid nitrogen should be recommended. In 1972 in ENT department professor V.D.Dragomiretskypractically introduced cryosurgical method of treatment of chronic tonsillitis by using autonomalcryoapparatus (KAO-01 $ KAO-02). Clinical and immunological investigation shoved that extreme cold not only leads to remove pathological changes of parts of palatine tonsills but have stimulating effect on organism of type tissue therapy Academic V.P.Filatov. It has hyposensibilising action and possesses immunocoregulator property. Cryoactiondoesen’t accompany general and local reaction of organism and these gives us to using cryosurgical method ambullatory to the patient to whom surgical method are contraindicated with high degree of risk. Cryosurgical method has the following advantages: cryodestruction is less painfull and in most cases is performed without anesthesia; there is no blood loss and method is usefull for the patients with high blood pressure and problems with blood coagulation; this can be used for serious somatic patients.

Methods of conservative treatment are quite varied. Irrigation of the lacunae with various antiseptic solutions (furacin, boric acid, ethacridine lactate, potassium permanganate) and also mineral alkaline water, peloidin and interferon is effective. A special syringe with a long curved cannula is used for the purpose. Among physiotherapeutic methods are UV rays, electromagnetic UHF and SHF oscillations, and ultrasound.

Indications for tonsillectomy are the following:

1. Chronic tonsillitis, simple and toxico-allergic (the first degree), in the absence of effect from conservative treatment.
2. Toxico-allergic chronic tonsillitis of the second degree.
3. Chronic tonsillitis complicated with peritonsillitis.
4. Tonsillogenic sepsis.

Tonsillectomy is absolutely contraindicated in the presence of severe systemic diseases of the cardiovascular system with circulatory insufficiency of the second and third degrees, renal failure with threatening uraemia, severe diabetes mellitus with threatening coma, severe hypertension with possible vascular crises, haemophilia (haemorrhagic diatheses), and other diseases of the blood and the circulatory system (chromocytopaenicpurpura, Osler-Rendu syndrome) that are attended with haemorrhage and resist any therapy, acute systemic diseases, exacerbations of chronic systemic diseases. Dental caries, inflammation of the gums, pyogenic diseases, menstruation, and last weeks of pregnancy are temporary contraindications for tonsillectomy.

Pre-operative management is carried out in out-patient conditions. In the majority of cases the operation is performed under local anaesthesia with the patient in the sitting position. Whenever necessary, tonsillectomy is performed under inhalation intubation anaesthesia.

The most common complication of tonsillectomy is bleeding from the tonsillar fossa. During the first day after the operation, the discharge from the mouth should be constantly controlled. It is necessary to remember that blood can pass into the oesophagus. In suspected bleeding, the patient's pharynx should immediately be inspected and blood clots, if any, should be removed and examined thoroughly. The bleeding sites should be clamped and ligated with catgut after preliminary anaesthesia. Pulse and pressure should be taken.

As distinct from vascular bleeding, parenchymatous bleeding is usually not profuse. It can be managed by haemostatics, such as vitamin K (vicasol) parenterally, a 10 per cent calcium chloride (or calcium gluconate) solution intravenously. The tonsillar fossa should be packed with a tampon soaked with haemostatics. If a tampon has to be held in place for a long time, the palatine arches can be ligated above it.If bleeding is profuse and all measures to arrest it fail, the external carotid artery is ligated on the involved side. In rare cases bleeding occurs at later terms: in 7-10 days after the operation. It should be arrested as described above. The patient should be hospitalized.

Prophylactic measures against chronic tonsillitis are substantially the same as against acute tonsillitis. There exist individual and social aspects in prevention of tonsillitis. *Individual prophylaxis* includes invigorating measures which strengthen the patient's resistance to infection and unfavorable environmental conditions. Acute tonsillitis is often preceded by local or general chilling. Hence the importance of general and local hardening of the body: regular exercises and sports, air baths, and sponging with water (with gradually lowering temperature). But all these measures should be taken gradually and regularly.

Social prophylactic measures include control of microbial and other kinds of contamination of the environment, including improvement of working and living conditions. Treatment of infectious foci in the mouth and nose is also very important for prevention of acute and chronic tonsillitis. Health education of population is another important measure.

A list of educational practical tasks that must be completed during the practical

1. Methodology of oropharyngoscopy.
2. Technique of posterior rhinoscopy
3. Technique of hypopharyngoscopy
4. Finger examination of the nasopharynx
5. Method of lubricating the mucous membrane of the oropharynx with medicinal preparations.

Oropharyngoscopy

Examination of the pharynx begins with an examination of the neck and palpation of regional lymph nodes. Then, with the help of a spatula, an examination of the hairline and oral cavity is carried out. Pay attention to the condition of the mucous membrane of the lips, cheeks, gums, teeth and tongue. During the examination of the oropharynx, the patient should breathe through the mouth without sticking out the tongue. Put the spatula on the front 2/3 of the tongue and press it down and slightly on yourself. It should be remembered that pressing on the root of the tongue can cause a vomiting reflex. They pay attention to the condition of the mucous membrane of the palatal brackets, soft palate, and the back wall of the pharynx. Normally, the mucous membrane of these areas is pink and has no thickenings. The condition of the palatine tonsils is determined during their rotation by pressing with another spatula on the front palatine arch. At the same time, the presence of contents in the lacunae of the palatine tonsils is revealed. Examining the back wall of the pharynx, it is possible to detect both individual granules of lymphadenoid tissue and significant accumulations of it, especially on the back walls of the pharynx behind the palatine brackets — the lateral ridges of the pharynx.

Posterior rhinoscopy

Examination of the nasopharynx is carried out with the help of a nasopharyngeal mirror and a spatula. With a spatula held in the left hand, the tongue is pressed in the front 2/3 of it and the patient is asked to breathe through the nose. Before that, a nasopharyngeal mirror heated on an alcohol bottle is carefully inserted behind the soft palate into the oropharynx with the mirror surface up, without touching the root of the tongue and the back wall of the pharynx. By illuminating the mirror and changing the viewing angle, the nasopharynx is examined in the reflected light beam. Normally, the mucous membrane in the vault of the nasopharynx is pink, the choanae are free and symmetrical, the lobe is on

middle line On the side walls of the nasopharynx, at the level of the rear ends of the lower turbinates, there are small depressions - the pharyngeal openings of the auditory tubes.

The vault of the nasopharynx contains a pharyngeal tonsil, which can be hypertrophied - adenoid vegetations. Children of early and younger childhood age are often subjected to a finger examination to examine the nasopharynx. For this, the doctor's assistant sits the child on his lap and

holds him. The doctor, standing to the side and somewhat behind, inserts the index finger of the right hand into the mouth, and then behind the soft palate into the nasopharynx, examining its walls with a finger; at the same time, with the finger of the left hand, you need to press the cheek of the child between the upper and lower teeth to prevent a bite. Normally, the nasopharynx is free. In the anterior parts, palpate the choanae, lamish. In the presence of adenoid vegetations, a soft-elastic lobular formation is revealed in the vault of the nasopharynx, which can cover the choanae.

Hypopharyngoscopy.

Indirect laryngoscopy and hypopharyngoscopy are performed with the help of a laryngeal mirror, which is previously heated in an alcohol bottle. During the examination, the patient's protruding tongue is held with the left hand using a gauze napkin. The laryngeal mirror is inserted through the oral cavity, with the mirror surface down. Without touching the root of the tongue and the back wall of the pharynx, the soft palate with the tongue is pressed up and back. In the mirror, the lingual tonsil, epiglottis, valeculae, scoop-epilaryngeal folds, scoop-like cartilages, vestibular and vocal folds, subfold space, glottis are clearly visible. Pay attention to the color of the mucous membrane, as well as the mobility of the vocal folds during breathing and phonation, the pronunciation of the vowel sounds "y" or "i".

At the same time as a laryngoscopy, an examination of the larynx is performed - a hypopharyngoscopy. At the same time, the root of the tongue, lingual tonsil, valeculae, pear-shaped corners are examined.

Direct laryngoscopy is performed using a laryngoscope. The patient lies on his back with his head thrown back. The laryngoscope is passed through the oral cavity, the root of the tongue is pressed upwards, and at the same time the instrument is passed to the larynx. The beak of the laryngoscope blade captures and squeezes the epiglottis and the root of the tongue. Such a location

the instrument provides a direct view of all parts of the laryngeal part of the pharynx, larynx and upper part of the trachea.

Lubrication of the mucous membrane of the mouth and pharynx with medicinal preparations.

1) Take a small piece of cotton wool with the I and II fingers of the left hand and thin it, stretching it with short movements of the I and II fingers of the right hand to the sides;
2) While continuing to hold the cotton wool, take the pharyngeal cotton wool holder (probe) with your right hand and place its distal end (cuts) on a piece of cotton wool, retreating the end part of the probe by 8-10 mm. from the edge of cotton wool;
3) Without changing the position of the hands, push the distal end of the probe together with cotton wool between the tips of the I and II fingers of the left hand by lightly pressing down and forward, and at the same time turn the handle of the probe 1-2 times in the direction of the time arrow with the I and II fingers of the right hand;
4) Holding the probe by the handle I and II with the fingers of the right hand, lower its distal part with cotton wool for 2-3 seconds. In a jar (vial) with the required solution;
5) Remove the distal end of the probe from the bottle, take a spatula in your left hand and, having performed a mesopharyngoscopy, insert the working part of the probe into the oral part of the pharynx under visual control, touching the required area of the mucous membrane with a cotton swab, lubricate it (depending on the indications and the drugs used Lubricants can be applied in the form of rubbing with simultaneous massage of the mucous membrane, stewing, applications.
6) Without changing the position of the spatula, carefully remove the probe from the oral cavity and, after carefully examining the oropharynx, remove the spatula, allowing the patient to close his mouth.

Finger examination of the nasopharynx

A finger examination of the nasopharynx is performed if the diagnosis cannot be established by anterior or posterior rhinoscopy. For this, a finger is inserted through the oral cavity behind the soft palate into the nasopharynx and its walls and contents are palpated.

As a rule, during such an examination, an assistant should help the doctor by holding the child on his lap.

In the presence of adenoids, the doctor cannot feel the back edge of the nasal septum with his finger, because this is prevented by the enlarged pharyngeal tonsil

Tests and tasks to control the final level of knowledge:

A. Question

1. Classification of chronic tonsillitis.
2. What types of inflammatory diseases of the pharynx do you know?
3. Name the most dangerous etiological factor of chronic tonsillitis.
5. What changes does the lymphadenoid tissue undergo during chronic tonsillitis??
6. Characteristic changes in the blood formula in the decompensated form of chronic tonsillitis

B. Tests for self-control.

I. The nature of the contents of the crypts of the palatine tonsils in chronic tonsillitis:

1. jelly-like liquid
2. secretory secretion
3. watery discharge
4. liquid manure
5. stones in crypts

II. The size of the adenoid tissue has…

1. 5 degrees
2. 4 degrees
3. 3 degrees
4. 2 degrees
5. 1 degree

III. Kornytsky's roller for chronic tonsillitis is...

1. swelling of the epiglottis
2. swelling of the pharyngeal tonsil
3. an increase in lymph nodes along the front edge of the nodular muscle
4. thickening and hyperemia of the anterior arch
5. thickening and hyperemia of the posterior arch

IV. What are the indications for tonsillectomy?

1. tonsil hyperplasia of the 1st degree
2. tonsil hyperplasia II degree
3. III degree hyperplasia of tonsils
4. chronic compensated tonsillitis
5. chronic subcompensated tonsillitis
6. chronic decompensated tonsillitis

V. Situational task.

Patient P., 23 years old, complains of periodic pain in the throat. In the anamnesis, he suffers from angina 1-2 times a year. During pharyngoscopy, the mucous membrane of the oral cavity is pink, congestive hyperemia of the anterior palatal arches, stage II tonsils, loose, caseous crusts in the crypts are noted. Peripheral l/nodes are enlarged to 2 cm, painless on palpation. From the side of internal organs, clinical analyzes - without pathology.

What is your previous diagnosis?

A. Catarrhal angina
B. Chronic compensated tonsillitis
C. Chronic hypertrophic pharyngitis
D. Diphtheria of the larynx
E. Chronic decompensated tonsillitis

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7. www.bundesaerztekammer.de – German Medical Association

Practical lesson No. 14

Topic: **Acute and chronic inflammatory diseases of larynx. Stenosis of larynx.**

Reason: Larynx being a part of the air conducting tracts of the organism, participates in fulfilling the main functions of breathing, phonation and speech. The violation of the normal anatomical and functional relitionships in the larynx leads to different pathological processes, firstly discovered by the development of the nose , larynx and voice disfunction. Chronic larynx diseases running with the disturbance of breathing and vocal functions, are often met in the clinical practice. Sick persons with chronic laryngitis are subjected to differential diagnosis from other larynx diseases, benign and malignant tumours.

The educational purposes:

The students should know:

1. Cause invoking chronic hyperplastic laryngitises;
2. Main clinical signs of this pathology;
3. Principles of treatment.

The students should know how:

1. To fulfil an indirect laryngoscope;
2. To put the diagnosis and to carry out the differential diagnosis.
3. To select conforming medical tactics.

Questions for selfverification:

1. Name joints of a larynx.
2. Name cartilages of a larynx.
3. Name external muscles of a larynx.
4. Than the vestibule of the larynx is derivated.
5. Name anatomical derivations of a middle department of a larynx.
6. Enumerate main functions of a larynx.
7. Scheme of stages of survey of a larynx at an indirect laryngoscope.

Equipment: tables, dummies, simulators, multimedia presentations, video films, tool sets, tuning forks, tomograms, radiographs, etc.

Plan

№№	The name of the composition of the class	Hour
I.	Organizational moment (greetings, checking those present, announcing the topic, the purpose of the lesson, motivating students to study the topic).	7
II.	Control of supporting topics.	38
2.1	Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units).	8
2.2	Questions (test tasks, problems, clinical situations) to check basic knowledge on the subject of the lesson.	30
III.	Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.).	40
3.1	Content of tasks (tasks, clinical situations, etc.).	20
3.2	Recommendations (instructions) for performing tasks (professional algorithms, orienting maps for the formation of practical skills and abilities, etc.).	3
3.3	Requirements for work results, including to registration	2
3.4	Control materials for the final stage of the lesson: problems, tasks, tests, etc. (if necessary).	15
IV.	Summing up.	5

The information block.

Acute catarrhal laryngitis. Acute inflammation of the laryngeal mucosa is usually extension of catarrhal inflammation of nasal and pharyngeal mucosa, e.g. in measles, pertussis, influenza, typhus, rheumatism, and some other diseases.

Symptoms. The disease is characterized by hoarse voice, tickling and dryness in the throat. The body temperature is usually normal and less frequently it rises to subfebrile. Simultaneously with the subjective signs, develops also dry cough, which later turns into wet cough. Voice production disturbances are characterized by various degrees of dysphonia to complete aphonia. Respiration is sometimes difficult because of accumulation of mucopurulent crusts and swelling of the mucosa.

Treatment. The larynx should first of all be spared. The patient is not allowed to talk until acute inflammation subsides. Spicy or cold food, alcoholic drinks and smoking are prohibited. A warming compress should be applied to the neck. Medicamentous therapy is directed at eliminating inflammation in the larynx and preventing complications. In some cases it is recommended to add of hydrocortisone suspension to the above mentioned mixture. Antibiotics can also be given by inhalation, but in all cases the patient's sensitivity to the drug should be tested. Counter attracting hot foot baths, mustard plasters on the calves, and inhalation of humidified oxygen are recommended to children. Air in the room where a sick child is treated should be moist.

Subglottic laryngitis (false croup) is a variety of acute catarrhal laryngitis which develops in the infraglottic space. It occurs in children ageing from 2 to 5 and is associated with the anatomy of their larynx (narrow lumen and loose connective tissue in the infraglottic space). The onset of the disease is as a rule connected with acute inflammation of the mucosa of the nose or the pharynx. False croup occurs mostly in children who tend to develop laryngospasm and suffer from diathesis. The onset of the disease is sudden: an attack of barking cough occurs during night sleep. The child wakes up and tosses in his bed. Breathing becomes very difficult and whistling; inspiratory dyspnoea is pronounced. The nails and the visible mucosa become cyanotic. The child is frightened and this intensifies coughing. Inspection of the child reveals retraction of the soft tissues of the jugular fossa, supra- and subclavicular spaces, and the epigastric region. This condition lasts from a few minutes to half an hour; the child then sweats excessively and his respiration becomes almost normal. The Thelaryngoscopic picture in subglottic laryngitis is characterized by ridge-like swelling of hyperaemic mucosa in the infraglottic compartment.

Treatment includes common hygienic measures, ventilation in the room, and therapeutic measures. The child is given warm milk and mineral water. Poultice and mustard plasters should be applied to the neck. Hot foot baths are also effective. The attack of asphyxia can be aborted by touching the posterior wall of the pharynx with a spatula thus stimulating the vomiting reflex.

Haemorrhagic laryngitis develops mostly as a complication of toxic influenza. Morphologically the process is characterized by haemorrhage into the thickness of the laryngeal mucosa, especially into the vocal and aryepiglottic folds (in the form of petechiae and large maculae). A permanent symptom is dry cough, usually in the morning. Later streaks of blood appear in the sputum during expectoration of crusts; scarlet blood is expectorated less frequently. Haemorrhage can develop in some cases with subsequent asphyxia.

Treatment. A 10 per cent calcium chloride solution, vitamin K (a tablet of 0.015 g 2 times a day), and an expectorant are quite effective to arrest small haemorrhage. The subsequent treatment is the same as for acute laryngitis.

Submucous laryngitis (angina laryngea). This is an acute inflammation of the lymphoid tissue of the larynx. These are substantially the same as in inflammation of the palatine tonsils. The patient complains of painful swallowing, painful turning of the head, and dry throat. The voice is changed in some cases; the larynx can be stenosed significantly to impede respiration. The body temperature is often 37.5-38^{0}C. Palpation of the neck reveals enlarged and very tender lymph nodes, usually on one side. Laryngoscopy shows hyperaemia and infiltration of the laryngeal mucosa on one side or over a circumscribed area. Separate follicles with punctate patches can sometimes be seen. If the disease runs a prolonged course, an abscess can develop on the tongue surface of the epiglottis.

Treatment is the same as for acute catarrhal laryngitis, but antibacterial preparations should be given in bigger doses. Tracheostomy is indicated for significant stenosis.

Phlegmonous laryngitis is a suppurative inflammation of the submucous layer, possibly of the muscles, tendons, and the laryngeal perichondrium. Its aetiological factor is infection (staphylococcus,

streptococcus, etc.). The disease occurs mostly in males ageing from 20 to 35. The affection can be circumscribed and diffuse.The patient complains of severe pain on swallowing, especially if the phlegmona is located on the tongue surface of the epiglottis and the arytenoid cartilages. If the glottis tissues are affected, the first symptom is hoarse barking cough and respiratory distress (to asphyxia). The body temperature is high. Examination reveals inflammation of the regional lymph nodes. Laryngoscopy reveals hyperaemic and infiltrated laryngeal mucosa with sites of necrosis. The formation of an abscess is characterized by circumscribed swelling; pus can be seen through the thinned mucosa. Mobility of some laryngeal structures is strongly restricted.

Treatment. The patient must be taken to hospital. Tracheostomy is indicated for increasing stenosis. Local and general antibacterial and anti-inflammatory therapy is started at the early period of the disease. If an abscess is present, it should be opened surgically. If the phlegmona spreads onto the soft tissues of the neck, external incisions are made to ensure adequate drainage of suppurative cavities.

Chronic inflammatory diseases of the larynx is in the majority of cases secondary to acute inflammations. It may follow incompletely resolved acute simple laryngitis. Presence of chronic infection in paranasal sinuses, teeth and tonsils and chronic chest infections, occupational factors, e.g. exposure to dust, fumes and other chemical components, smoking, alcohol, vocal abuse are important contributory causes. Three forms of chronic inflammatory diseases of the larynx and the trachea are now distinguished: catarrhal, hyperplastic, and atrophic.

Chronic catarrhal laryngitis is in most cases secondary to acute laryngitis. The main aetiological role of this pathology in singers, actors, lecturers, etc. is the occupational overload on the vocal apparatus. Laryngoscopy reveals congestive hyperaemia of the laryngeal mucosa, which is more pronounced in the region of the vocal folds; blood vessels are often dilated.

Treatment is aimed at eliminating the aetiological factor. The patient must rest his voice. Local therapy includes instillation of an antibiotic solution containing hydrocortisone suspension (5 ml of isotonic sodium chloride solution, 50000 U of streptomycin, and 30 mg of hydrocortisone suspension). This solution is instilled into the larynx once a day in a dose of 1.5-2 ml. The same mixture should also be given by inhalation 2 times a day. The course includes 10 sessions.

This course can be followed by inhalations of oil solution. The use of only oil and alkaline-oil inhalations should be limited, because these preparations have an adverse effect on the ciliated epithelium (inhibiting its function).

Chronic hyperplastic laryngitis is characterized by hyperplasia of the laryngeal mucosa. Local and diffuse forms of the disease are distinguished by the extent of involvement. The main complaint of the patients is hoarseness and even aphonia, which are usually due to uneven thickening of the vocal folds and paresis of the vocal muscles. Direct and indirect laryngoscopy reveal hypertrophy of the mucosa which is usually symmetrical on both sides of the larynx and in the interaryte-noid notch. This hyperplasia can however be malignant and the diagnosis of chronic hyperplastic laryngitis should be established not only by observing the clinical signs of the disease but also by the histologic and cytologic findings.

Treatment is, in the first instance, directed at removing the causative factors; talking must be prohibited. Exacerbations are treated like acute catarrhal laryngitis. If mucosal hyperplasia is significant, a 1-2 per cent silver nitrate solution is applied every other day during the course of 2 weeks.

Pachydermialaryngis is characterised by heaping up of epithelium in the interarytenoid region and vocal processes of aryttnoids. Exact aetiology is not known but disease mainly affects males who indulge in excessive smoking and alcohol. When changesare confined to the vocal processes, disease is termed as "contact pachydermia" or "contact ulcer". Hoarseness or huskiness of voice is the main presenting feature and is due to faulty approximation of cords. Hawking, i.e. constant desire to clear the throat. This is because mucus keeps sticking in the interarytenoid region. Examination shows heaping up of epithelium in interarytenoid region which may extend to vocal processes and sometimes arytenoids. On phonation, it stands out like a "cock's comb". Biopsy is essential to exclude tuberculosis or carcinoma.

Treatment is generally unsatisfactory. Surgical removal of hypertrophic tissue under operating microscope, sometimes in several sessions, may be required.

Leukoplakia or keratosis are also a localised form of epithelial hyperplasia involving upper surface of one or both vocal cords. It appears as a white plaque or a warty growth on the cord without affecting its mobility. It is regarded as a precancerous condition because “carcinoma in situ” frequently supervenes. Hoarseness is the common presenting symptom. Treatment is stripping of vocal cords and subjecting the tissues to histology for any malignant change.

Polypoid degeneration of vocal cords (Reinke’soedema). It is bilateral symmetrical swelling of the whole of membranous part of the vocal cords, most often seen in middle aged men and women. This is due to oedema of the subepithelial space (Reinke 's space) of the vocal cords. Hoarseness is the common symptom. Patient uses false cords for voice production and this gives him low-pitched and rough voice. Vocal cords show pale, translucent fusiform swellings. Ventricular bands may appear hyperaemic and hypertrophic and may hide view of the true cords.Treatment: Decortication of the vocal cords, i.e. removal of strip of epithelium, is done first on one side and 3-4 weeks later on the other. Voice rest.Speech therapy for proper voice production.

Chronic atrophic laryngitis. Atrophic laryngitis is usually connected aetiologically and pathogenetically with atrophy of the nasal and pharyngeal mucosa. Pollution of air with dust or gases, smoking and abuse of alcohol are among the provoking factors. Patients complain of dryness, tickling and the feeling of a foreign body in the throat, and progressing dysphonia. In the early period of the disease laryngoscopy reveals bright hyperaemia of the mucosa which looks lustrous. Hyperaemia subsides at later stages and tenacious secretion appears, which thickens into dark-green crusts in the larynx. On coughing-up streaks of blood can be seen in the expectorated sputum due to destruction of the laryngeal epithelium during cough.

Treatment. The patient must not smoke or take irritating food; he should rest his voice. Preparations thinning sputum and facilitating its expectoration should be given. Throat irrigation and inhalations of an isotonic sodium chloride solution should be performed (200 ml of isotonic solution, 5 drops of a 10 per cent iodine tincture). The irrigations and inhalations are performed 2 times a day using 30-50 ml of the solution for a session. The course lasts 5-6 weeks. The procedures can be done at home in the morning and in the evening. Oil-alkaline inhalations are carried out for 3-5 days only in the presence of tenacious mucus and crusts in the larynx. A 1-2 per cent oil solution of menthol should be inhaled daily during 10 days. This preparation can also be instilled into the larynx (menthol has weak irritating and disinfecting properties and therefore the patient's sensitivity to the drug should be checked). Concurring atrophic process in the larynx and the pharynx can be effectively treated with submucous injection (into the lateral portions of the posterior wall of the pharynx) of a novocain and aloe solution. In order to stimulate the action of the glandular apparatus of the mucosa, 8 drops of a 30 per cent potassium iodide solution should be given per os 3 times a day during two weeks.

Chondroperichondritis of larynx is associated with spreading of the inflammation from the soft tissues onto the cartilage. Acute and chronic processes are distinguished.

Symptoms. These mainly depend on the location of the focus. Indurated soft tissues usually circumscribe the inflamed part of the cartilage; external and internal purulent fistulae are periodically formed. Laryngoscopy reveals indurated and oedematous areas of the mucosa, which narrow the lumen of the larynx. The disease is usually long-standing; it can persist for several months and even years.

Treatment of acute chondroperichondritis includes administration of big doses of antibiotics and sulpha drugs which eliminate inflammation. Physiotherapy should be prescribed depending on the character of the inflammation: UV light, UHF- and SHF-therapy, ion-galvanization of the larynx with calcium chloride, chymotrypsin, and potassium iodide; warming compresses are effective. The patient with chondroperichondritis should be given pasty non-irritating food. Tube feeding is not recommended, because the gastric tube can irritate the laryngeal tissues. The general reactivity of the body can be increased by biological stimulants (aloe, vitreous body, etc.). Surgical intervention is indicated for an abscess which should be emptied to remove the necrotized tissues. The presence of fistulae is also an indication for surgery, by which the fistula is opened and necrotized tissue removed.

DISORDERS OF LARYNGEAL NERVES. Sensory and motor disorders of the laryngeal nervous apparatus are distinguished.

Disorders in the sensibility can be central and peripheral. Central disorders cause bilateral affections. The only exception is hysteria. The sensory disorders are anaesthesia, hyperaesthesia and paraesthesia.

Anaesthesia usually occurs in injuries to the larynx and the superior laryngeal nerve. Surgical intervention on the organs of the neck can also cause anaesthesia. Anaesthesia usually causes an insignificant subjective feeling. But in some cases it can be dangerous because food and liquid can pass into the airways.

Hyperaesthesia can be of various intensity. In some cases it can take the course of neuralgia. If sensitivity increases, perverted sensations may appear (paraesthesia). Hyperaesthesia is usually caused by the systemic nervous diseases (neurasthenia, hysteria) or changes in the peripheral nerves of the mucosa. The disorder is characterized by the tingling sensation when breathing and talking; sometimes the patient feels an urge to cough-up mucus.

Paraesthesiae can be manifested by various sensations such as burning, tingling, foreign body in the throat, spasm, and the like.

Treatment. This includes measures acting on the nervous system, such as immersion and pine sedative baths, vitamin therapy, aloe, rational labour and leisure, etc. Novocain block is effective when administered into the ganglion or the conduction routes.Physiotherapy of peripheral affections includes intra- or extra-laryngeal galvanization, diathermia, and the like.

Motor disorders. A weakening, or paralysis, of the laryngeal muscles may be associated with their lesions or disturbed nerve supply.

Distinction should be made between functional paralyses, which in most cases are caused by affections of the constrictor muscles of the glottis, and organic paralyses which are due to lesions of the laryngeal nerves, above all of the dilator muscles of the glottis.

Disturbances of the laryngeal motor function may originate both in the central and the peripheral nervous systems. The cause of *central paralysis* may be syringomyelia, tabes, hysteria, as well as gummas, tumours, hemorrhages in the cerebral cortex, bridge of Varolius, medulla oblongata, and sometimes in other parts of the brain stem. Sometimes, inferior laryngeal nerve paralysis of central origin is accompanied by simultaneous lesions of other neighbouringcranio-cerebral nerves, viz., the 9th, 10th, llth and 12th.

Peripheral paralysis follows an injury to the recurrent laryngeal nerve which on its relatively long path may be compressed by mediastinaltumours, aortic aneurysms, goitre and carcinoma of the esophagus, or it may result from affection of the nerve itself, such as alcoholic and syphilitic neurites in tabes, and neuritis of rheumatic origin. Lesions of the inferior laryngeal nerve are frequently caused by excision of the goitre. Laryngeal examination reveals that the vocal cord on the paralyzed side, instead of being abducted, lies half-way between the position during respiration and during phonation, that is, in the intermediate position, otherwise known as the cadaveric position.

The clinical symptoms of unilateral paralysis of the recurrent nerve are slight. The affection of the vocal cords is relatively mild with slight hoarseness, quick vocal fatigue and free respiration. Bilateral paralysis, however, endangers the patient's life and often requires tracheotomy, since both cords lie so close to the median line as to narrow the glottis to the point of asphyxia.

Apart from neuropathic or organic paralyses of the larynx there are frequent *myopathic*, *functional paralyses* caused by all kinds of inflammations in the larynx or vocal abuse by public speakers, singers, teachers, etc. The lesion more often affects the vocal muscles.

Paresis of both vocal cords prevents their full approximation in phonation, and the glottis in such cases is a long and oval chink pointed at both ends. The voice becomes hoarse, in some cases there may be complete aphonia. It should be noted that myopathic and neuropathic paralyses are clinically very much alike and offer completely identical signs in laryngoscopy. It should also be borne in mind that paralysis of the inferior nerve is a symptom of constitutional, and perhaps very serious disturbance.

Treatment. The primary measure is to remove the causes of the disease. Prolonged vocal rest, treatment of chronic inflammation and the wide use of electrotherapy with galvanic and faradic currents may be recommended to hasten cure. At the onset of the disease, these measures are usually effective. The chances of recovery from neuropathic paralysis of the laryngeal muscles are strictly contingent on the outcome of the basic disease.

STENOSIS OF THE LARYNX is the narrowing of its lumen interfering with normal passage of air to the dependent airways.

Acute stenosis occurs suddenly or develops within a comparatively short period of time. The main pathophysiological factors that should be assessed immediately in acute stenosis of the larynx are the following: (1) the degree of external respiratory insufficiency; (2) the body reaction to oxygen deficit.

The body reserves cannot be realized during acute development of stenosis. The adaptation reactions of the body are respiratory, haemodynamic, blood and tissue reactions. The respiratory reaction is manifested by dyspnoea which increases ventilation of the lungs due to deeper breathing and higher respiratory rate. The haemodynamic compensatory reactions are characterized by tachycardia and increased vascular tone, which increase the minute blood volume 4 or 5 times. These mechanisms can to a certain degree lessen hypoxia and hypercapnia; insufficient lung ventilation can be compensated for on the condition that a certain minimum volume (individual for each particular patient) of air is inhaled. In these conditions, increasing stenosis induces severe pathological reactions.

Acute stenosis of the larynx can be caused by local inflammatory diseases such as the laryngeal oedema, acute infiltrative or abscessing laryngitis, chondroperichondritis of the larynx or submucous laryngitis, local non-inflammatory processes, various injuries, foreign bodies, etc., acute infectious diseases such as measles, scarlet fever, diphtheria and the like, systemic diseases of the body such as diseases of the heart and vessels, of the lungs, the kidneys, etc. Depending on the degree of stenosis, stridor develops. Examination reveals retraction of the supraclavicular fossae and the intercostal spaces; respiratory rhythm becomes upset. All these symptoms are associated with increasing negative pressure in the mediastinum. A patient with pronounced stenosis develops fear and motor excitation (the patient tosses in his bed and tries to run). The face is pale , the patient perspires; the heart activity and the secretory function of the stomach and the excretory function of the kidneys are upset. If stenosis persists, the pulse is accelerated, the lips, the nose and the nails become cyanotic due to accumulation of carbon dioxide and the oxygen deficit and decentration of blood circulation. Inspiratory dyspnoea develops simultaneously.

The following stages classified in the *clinical course* of stenosis: stage I, compensation; stage II,subcompensation; stage III, insufficiency or decompensation; and stage IV, asphyxia.

At the stage of compensation the patient does not develop respiratory distress at rest, but tachypnoea develops during walking; the width of the glottis is 6-7 mm.

At the stage of subcompensation the patient develops inspiratory dyspnoea at rest, with involvement of the accessory muscles in the respiratory act; the intercostal spaces, soft tissues of the jugular and the supraclavicular fossae are retracted; stridor, pallor and restlessness are characteristic. The glottis is 4-6 mm.

The insufficiency stage is characterized by shallow and accelerated respiration; the patient assumes a forced position (half-sitting in his bed and holding fast on the headrest or some other object). The larynx moves to maximum possible distance up and down. The face is pale and cyanotic; the patient is frightened, he perspires; his lips, the nose tip and the terminal phalanges are cyanotic; the pulse is fast. The glottis is 2-3 mm wide.

At the stage of asphyxia, respiration is hardly possible and discontinues at any moment. The width of the glottis is about 1 mm. The heart activity is distressed, the pulse is fast and thready, the skin is grey and pallid. In severe cases the patient is unconscious; exophthalmos is characteristic; the patient urinates and defaecates involuntarily; death ensues quickly.

Treatment depends on the cause and stage of acute stenosis. Emergency care in stenosis caused by oedema and inflammation of larinx: antiinflammatorytherapy ; use of corticosteroids (3-5 mg. per kg. mass). Gglycocorticoids give antiinflammatory, as well as antiallergic affect; use of lytic mixture, consisting of 2% solution of papaverine, 1% dimedrol solution; 2.5% solution of aminasine , in clinical conditions. This mixture is injected intramusculary. Simultaneous intravenous injection of 20% solution of glucose, hydrocortisone, 2.4% solution of euphillini, 10% solution of Ca gluconate, 5% solution of ascorbinic acid; inhalation of antiedemic mixture : ephedrine hydrochloride 5% -1; adrenaline hydrochloride 0.1% - 1.0; pipolfen 2.5 – 1.0; humid oxigen, hot bath .

Decompensation (stage III) should be treated surgically: immediate tracheostomy or intubation are indicated. The patient can be intubated with elastic tubes used for intratrachealanaesthesia in intensive therapy departments. Asphyxia (stage IV) requires urgent coniotomy and then tracheostomy.

Chronic stenosis arises due to persistent morphological changes in the larynx and the adjacent organs and tissues. As a rule, chronic stenosis develops slowly and gradually. Causes of chronic stenosis of the larynx are quite varied. Common causative factors are (1)chondroperichondritis (traumatic, infectious, radiation); (2) disturbed mobility of the cricoarytenoid joint; (3) dysfunction of the inferior laryngeal nerves due to toxic neuritis, following strumectomy, compression by a tumour, and the like; (4)tumour, tuberculosis, syphilis, or scleroma.

Patients with chronic stenosis of the larynx often develop bronchitis and emphysema due to long-standing hypoxia; bronchopneumo-nia is frequent in children. The heart is enlarged and the myocardium hypertrophied. These affections narrow the tracheal lumen and are therefore very dangerous.

Treatment of chronic stenosis is often very difficult and in some cases the lumen of the larynx is restored to normal size only after a prolonged treatment. Special dilators are used for regular artificial dilatation of the stenosed larynx. La-ryngostomy and prolonged (for some months) dilatation of the larynx by T-tubes (better plastic) give more reliable results.

Tracheotomy may be superior or inferior depending on whether the trachea is opened above or below the isthmus of the thyroid gland. The patient is placed on the operating table with his shoulders propped high on a round bolster and his head tilted far back. The skin and superficial cervical fascia are incised strictly in the midline of the neck, and the incision is carried from the lower edge of the thyroid cartilage some 6 cm downwards. The front surface of the cricoid cartilage is then exposed with blunt instruments strictly in the midline, a transverse incision made in the capsule of the thyroid isthmus lying below, and the isthmus pushed down to expose the first tracheal rings. Following the arrest of bleeding, two or three tracheal rings are cut with a sharp scalpel for insertion of the tracheotomy tube. This consists of two connected metal tubes which slide one within another. The insertion of the tube is followed by a vigorous expectoration of sputum and then by quiet respiration. The tube is fastened with a bandage applied to the neck, while the incision is sutured with one or two stitches above and below the tube. The operation is commonly performed under local anesthesia but in the event of asphyxia where time is a factor of overriding importance no anesthesia is applied.

A too big incision of the trachea and complete stitching of the skin cut may give rise to subcutaneous emphysema, which is provoked by violent cough. This condition is identified by a markedly swollen neck and characteristic cracking sounds produced by the movement and bursting of air bubbles when the affected areas are being palpated. In such cases, the stitches of the wound must be loosened.

Stuffs for selfverification.

Tests

A patient after aspiration of dye steams has felt sense of a foreign body in the pharynx, change of a voice, difficulty in swallowing and respiration on physical load. At indirect laryngoscopy glassy edema of the ary-epyglottic folds and hypoglottic part of a larynx have been marked. What is presumable diagnosis?

1. Acute hypoglottic laryngitis
2. burn of laryngeal mucous
+3.Allergic edema of the larynx, stenosis of the larynx of I degree
4. Stenosis of the larynx of II degree
5. Nothing from listed

A child in the background of acute hypoglottic laryngitis developed stenosis of the larynx. At examination the inspiratory dyspnea, paleness of the derm, tachycardia are marked. What are doctor's urgent measures?

1. injection of spasmolitics, antihistamine drugs
2. inspiration of humidified Oxygenium
3. tracheotomy

+4.intravenous injection of corticosteroid drugs
5. Nothing from listed
A patient within 5 days was disturbed by severe pharyngalgia. To the doctor he has addressed while having rough respiration. At examination inspiratory dyspnea in rest, acrocyanosis, tachycardia have been marked. The patient's condition is getting worse. What inflammatory diseases can cause development of acute stenosis of the larynx?
1. Angina of palatine tonsils
2. Acute rhinitis
+3. Phlegmon of the larynx, chondroperichondritis
4. Acute pharyngitis
5.nothing from listed
The child with constrictive laryngotracheitis had the IV stage of laryngeal stenosis. Determine the medical measures:
1. Medicament destenosation
2. Prolonged nasotracheal intubation
3. superior tracheotomy
+4. Inferior tracheotomy
5. Nothing from listed
Patient's asphyxia was developed as a result of getting of a foreign body in respiratory ways. What localization of a foreign body in respiratory ways can not cause an asphyxia?
1. Balloting foreign body of the tracheas strangulated between voice folds
2. Large foreign body fixed above the voice rima
3. Foreign body of the larynx which have caused a collateral edema of the mucosa
4. Foreign body fixed in the subglottic space in child
+5. Nothing from listed
A patient had the progressing stenosis of a larynx due to allergic edema. What following clinical sings can testify to transition of the subcompensated stage of a stenosis of a larynx in decompensated one?
1. Appearance of an inspiratory dyspnea at physical movement
2. Paleness of a skin and visible mucosa
+3.akrocyanosis, cyanosis of skin and visible mucosa
4. Noisy stridorous respiration
5. Nothing from listed
A patient complains of tussis, hoarseness, fervescence appeared two days ago after drinking of a cool water. At laryngoscopy: the mucosa of the larynx is hyperemic, infiltrated voice folds are pink, voice rima is wide. What is diagnosis?
+1.acute catarrhal laryngitis
2.acute subglottic laryngitis
3.phlegmonas laryngitis
4.allergic swelling of the larynx
5.nothing from listed
A patient complains of a severe pain at turns of the head, swallowing, rigon, fever up to 38^0C. Disease began acutely three days ago. At indirect laryngoscopy the mucosa of the pharynx and larynx was hyperemic, moderately swelling. On the lingual surface of the epiglottis there is a spherical protrusion with yellow spot on its top. The inferior departments of the larynx are not seen. What is diagnosis?
1.acute catarrhal laryngitis
2.diphtheria of the larynx
+3.abscess of the epiglottis
4.tumour of the larynx
5.nothing from listed
A patient has hoarseness. At indirect laryngoscopy immovability of one true voice fold has been determined. What is possible cause of this state?
+1.paresis of the recurrent nerve
2.paresis of the superior laryngeal nerve
3.bulbar disorders

4.acute catarrhal laryngitis
5.nothing from listed
A 37 years old emotionally labile women complains of periodic hoarseness, not connected with respiratory diseases. Speaks in a whisper. At laryngoscopy the larynx without the inflammatory sings. Nondense contact of voice folds at phonation. Tussis is sonorous. What is prospective diagnosis?
1.acute laryngitis
2.paresis of the recurrent nerve
+3.fonastenia
4.chronicsubatrophic laryngitis
5.nothing from listed
A 53 years old patient , smokes, complains of hoarseness during last year. At attack speaks only in a whisper. At indirect laryngoscopy the mucosa was pink, with cyanotic shade, voice folds are hyperemic, thick, mobile, voice rima at inspiration was wide. What is prospective diagnosis?
1.acute laryngitis
2.chronic catarrhal laryngitis
3.chronic atrophic laryngitis
+4.chronic hypertrophic laryngitis
5.nothing from listed
Parents within 6 months marked a constant hoarseness in 3 years old child. Last two days in the background of endured acute respiratory disease dyspnea has appeared on physical stress. Examination of the larynx is necessary to make diagnosis. What method of diagnostics is applicable in this case?
+1. Direct laryngoscopy
2. Indirect laryngoscopy
3. Pharyngoscopy
4. Digital examination of the pharynx
5.nothing from listed
A 2 years old child in the background of acute respiratory disease suddenly at night developed bark tussis, hoarseness, emotional and motorial disturbance, rough respiration at physical stress. What is diagnosis?
1.acutenasopharyngitis
2.acutetracheobronchitis
+3.acute hypoglottic laryngitis, stenosis of the larynx of I degree
4.allergic edema of the larynx
5.nothing from listed

In a patient immovability of voice folds ("corpse" position), stenosis of the larynx subitaneously has appeared. What kind of lesion of the recurrent nerve there can be in such a state?
+1. Double-sided lesion of traumatic character (for example, after strumectomy)
2. Hemilesion
3. Phonasthenia
4. Tumor of the mediastinum
5. nothing from listed
At night a 2 years old child in the background of acute respiratory disease suddenly developed bark tussis, hoarseness, emotional and motorial disturbing, rough respiration at physical stress. What is diagnosis?
1.acutenasopharyngitis
2.acutetracheobronchitis
+3.acute hypoglottic laryngitis, stenosis of the larynx of I degree
4.allergic edema of the larynx
5.nothing from listed
A patient has been diagnosed cancer of the middle part of the larynx. What are subjective signs disturbing the patient at the given localization of the process?
1. Pain at swallowing
2. Sensation of a foreign body in the pharynx

3. Sense of a burning sensation, dryness in the pharynx
+4. Increased hoarseness of constant character
5. nothing from listed

A 3 years old child has had intubation of a larynx because of acute constrictive laryngotracheitis. What is the maximal term of setting of endotracheal tube in the respiratory ways at prolonged intubation?

1. Day
+2. Five days
3. Ten days
4. Fourteen days
5. It is more than fourteen days

Questionsforself- control

1. Clinical topography of the larynx.
2. Name the internal muscles of larynx.
3. Name the part of larynx.
4. Innervation of larynx.
5. Which of the larynx functions suffer in bilateral paralysis of the recurrent nerve.
6. Name the methods of examination of larynx.
7. Which ligament lies between the thyroid and cricoid cartilages.
8. Structural specialties of the mucous membrane of larynx.

Answers to the questions.

1. The larynx is situated at the level of 3-4 cervical vertebra. The boundary of larynx coincides with the upper edge of the thyroid cartilage and opens in the hypopharynx. The lower boundary coincides with the lower edge of cricoid cartilage and pass into the trachea.
2. The muscle dilating the laryngeal space – posterior crico- arytenoid muscle.

Constrictor of the larynx – crico- thyroideal muscle.
Helper muscles – lateral crico-arytenoid muscle.
Muscle regulating voice folds– anterior crico- thyroid muscle, internal thyreoarytenoid muscle.

3. Superior (Vestibular); Medial (area of fissure vocalis); Inferior (area under the plicavocalis)
4. Vagusnerve : 1). Superior laryngeal nerve (sensory) 2). Inferior laryngeal nerve (motor).Sympathetic innervation – from the superior cervical sympathetic node.
5. Respiratory (laryngostenosis) and vocal.
6. Indirect laryngoscopy; Stroboscopy; Roentgenoscopy; Microlaryngoscopy; Tomography.
7. Ligamentumconicum.
8. Presence of squamous epithelium, porous connective tissue and lymph tissue.

Questions for self testing.

1. Give the definition of laryngostenosis.
2. What are the differences between acute and chronic laryngostenosis?
3. Name the causes of acute laryngostenosis.
4. Which of the diseases of larynx and pharynx may cause laryngostenosis?
5. Which infectious diseases may cause construction of larynx?
6. Name the causes of chronic laryngeal constriction.
7. Name the specific diseases of larynx, which cause chronic stenosis.
8. Name the stages of laryngostenosis and describe them.
9. Pathogenetic mechanism of laryngostenosis.
10. With which diseases should laryngostenosis be differentiated.
11. Name the contents of the antiedemicinhalatory mixtures and their doses.
12. Specify the daily dose of corticosteroids.
13. Specify the contents of the lytic mixture, which is used to calm the patient.
14. Which medicines relieve acidosis?
15. What does “medicinal tracheotomy” mean?
16. Indications for tracheotomy in laryngostenosis.
17. What will you do in presence of foreign bodies in respiratory tract?

18. Name the types of tracheotomy.
19. Name the complications of tracheotomy.
20. Prophylaxis of acute and chronic laryngostenosis.
21. How many methods of investigation of pharynx and larynx do you know?
22. Indications for tracheotomy in acute laryngostenosis.
23. Which stage of stenosis is characterized by white asphyxia.
24. Pharyngitis: clinical form, methods of treatment.
25. Acute laryngitis. Name the causes and main symptoms.
26. Acute laryngotracheitis in children. Enumerate key symptoms. Draw a laryngoscopic picture.
27. Chronic laryngitis, the main clinical forms, treatment.

The differences between larynx stenosis and tracheal one.

Clinical indications	Larynx stenosis	Tracheal stenosis
The type of short breathing	Mainly of inspiratory type	Mainly of expiratory type
Position of the sick man's head	Tossed back	Lowered
Larynx movement	Wen-observed forced	Hardly observed
Voice changes	Present	Absent
Piece of list ring to when breathing	On larynx	On trachea

How to differentiate the stages of larynx stenosis.

Stages	Symptoms
The first stage of compensation	Deepened and restricted respiratory excursions, shortening or falling out of the respiratory pause
The second stage of untotal compensation	Deep respiratory expansion with the help of the auxiliary muscles: over and under collar bone muscles and rib interspaces pull in wings of nose are blown
The third stage of decompensation	Maximal excursions of the larynx and auxiliary muscles. A sick person in restless state jumps out of bed. Paleness, cold perspiration, cyanosis. Respiration is fast and superficial.

Exercise for self testing.

1. White asphyxia is characteristic of:
a) II stage of stenosis .
b) III stage of stenosis .
c) IV stage of stenosis.
2. Which of the following steps will you take to cope with III stage of stenosis of tumoral etiology?
a) conservative therapy.
b) intubation.
c) distracting therapy.
d) tracheotomy .
3. What will be your tactic in case of I stage of stenosis of inflammatory origin?
a) advice.
b) expectation
c) anti-inflammatory therapy.
d) distracting therapy.
e) tracheotomy.
f) intravenous injection of corticosteroids.
g) inhalation of antiedemic mixture.
h) intramuscular injection of corticosteroids .
4. Name 4 diseases, which may cause the chronic laryngostenosis.
a) scarlet fever.

b) cancer of the larynx.
c) papillomatosis of the larynx.
d) paratonsillar abscess.
e) foreign bodies of larynx.
f) diseases of kidney.
g) paresis of recurrent nerves after strumectomy.
h) tuberculosis of larynx.

5. How will you treat a child with laryngostenosis of IV stage?
a) superior tracheotomy.
b) Inferior tracheotomy.

6. With which of the following diseases laryngostenosis should be differentiated?
a) inflammation of the lungs.
b) rheumatism.
c) tumor of the mediastinum.

7. Which symptoms characterize 1,2,3,4 stages of laryngostenosis ?
a) noisy difficult breathing.
b) difficult breathing.
c) cyanosis of lips, acrocyanosis .
d) motor excitation.
e) fear
f) involuntary urination and defecation.
g) palenasolabial triangle.
h) dilatation of pupil.
i) retraction of intracostal spaces.
j) Chain-Stock's respiration.

8. Name the methods of 1)treatment and 2)prophylactic of acute laryngostenosis.
a) antidiptheretic vaccines and vaccines against whooping cough.
b) inhalation antiedemic mixture.
c) anti-inflammatory therapy.
d) sudorifics and diuretics.
e) hospitalization.
f) Intravenous corticosteroid therapy

9. Name the fascia of the neck you will cut in tracheotomy
1; 2; 3.

10. Name the methods of treatment of laryngostenosis of inflammatory etiology.
1; 2; 3; 4; 5; 6.

11. Name the types of tracheotomy.
1. 2. 3.

12. Name the indications for tracheotomy in patient with acute laryngostenosis.

13. Your tactic in coping stenosis, caused by foreign body.
a) removal of the foreign body.
b) antiedemic treatment.
c) anti-inflammatory therapy.

14. Name the complications of tracheotomy.
1; 2; 3; 4; 5; 6.

15. Indications for intubation.
a) diphtheria.
b) stenosis.
c) acutelaryngostenosis, caused by laryngeal trauma.

Solve the following problems.

Task 1. A 2 year old child with noisy breathing has been admitted to the hospital. Following symptoms were found: pale nasolabial triangle, acrocyanosis, cough, supplementary muscles participated in respiration. Sick for 5 days.Acute current of symptoms. Body temperature is 37.8 C.

a) Your diagnosis.
b) Etiology.
c) Treatment.

*Task 2.*A patient has been transferred from surgical department to the ENT department after strumectomy. Following symptoms were found – stridor, quick superficial breathing, retraction of supraclavicular and jugular fosses, increased excursion of larynx. Indirect laryngoscopy shows stillness of laryngeal folds.

1. Name the stage.
2. Treatment.

Task 3. A 45 year patient with II stage of laryngeal cancer was under observation of a ENT specialist for 2 years. Refused any sort of treatment. Objective findings: stridor, pallor, labial cyanosis, participation of accessory muscles in respiration. Indirect laryngoscopy shows tumor of the larynx, which block the laryngeal space. Width of the fissure larynges – 3 mm.

1. Name the stage.
2. Treatment.

Independent work for the student.

1. To enlist the instruments used for tracheotomy.
2. To conduct differential diagnosis with the symptom of "difficult laryngeal respiration".

XI. Answers to tasks.

1.B; 2. D; 3.C, D, F, H; 4.B, D, G, H; 5.B; 6.A, C, D; 7. I stage – B; II stage – A, E, G, I; III stage – C, D, E, I; IV stage – F, H, J. 8. I) B, D, h; 2) A, C.

9. 1) superficial fascia.
1) 2 ndand 3rd fascia –white line of neck.
2) 4 th fascia – endocervical.

1O. 1) injection of corticosteroids.
2) anti-inflammatory drugs.
3) desesnsibilising drugs.
4) detoxication.
5) medicine against acidosis.
6) lytic mixture.

11. 1) superior; 2) medial; 3) inferior.
12. Ineffective conservative therapy in III stage of stenosis.
13. A, B, C.
14. 1) hemorrhage.
2) mediastinal emphysema.
3) subcutaneous emphysema.
3) pneumothorax.
4) esophageal trauma.
5) perichondritis of the laryngeal cartilage.
15. A, B.

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Practical lesson No. 15

Topic: Malignant tumors of ENT-organs

Reason: Malignant neoplasms become a frequent cause of death. In connection with the rise of frequency of the upper respiratory tract oncological diseases any physician must be able to diagnose malignant neoplasms and benign neoplasms of the ear, nose and throat, and know the principles of prophylaxis and dispensary treatment of patients.

Lesson duration – 90 min.

Purpose: After the topic studying a student must: have a clear understanding of epidemiology of edematous, the classification of the upper respiratory tract and ear edemas, the methods of the surgical treatment.

He must know the clinical indications in the most frequent neoplasms, the principles of treatment and prophylaxis.

A student must be able to make the endoscopic investigation of the upper respiratory tract and ear, define the early symptoms of neoplasm in time and make the differential diagnosis, carry out some diagnostic and treatment manipulations.

For realization of aim it is necessary the knowledge of anatomophysiological characteristic of ear, nose, paranasal sinuses, pharynx, larynx and methods of their examination.

Equipment: tables, dummies, simulators, multimedia presentations, video films, tool sets, tuning forks, tomograms, radiographs, etc.

Plan

№№	The name of the composition of the class	Hour
I.	Organizational moment (greetings, checking those present, announcing the topic, the purpose of the lesson, motivating students to study the topic).	7
II.	Control of supporting topics.	38
2.1	Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units).	8
2.2	Questions (test tasks, problems, clinical situations) to check basic knowledge on the subject of the lesson.	30
III.	Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.).	40
3.1	Content of tasks (tasks, clinical situations, etc.).	20
3.2	Recommendations (instructions) for performing tasks (professional algorithms, orienting maps for the formation of practical skills and abilities, etc.).	3
3.3	Requirements for work results, including to registration	2
3.4	Control materials for the final stage of the lesson: problems, tasks, tests, etc. (if necessary).	15
IV.	Summing up.	5

Additional block of information:

Tumours of the upper respiratory tract.

Morphologic classification of the upper respiratory tract tumors.

I type. Highly differentiated tumors - benign (osteoma, chondroma, lipoma, fibroma, angioma, adenoma, neurinoma, etc)

II type. Malignant tumors - Cancer

1 grade. Highly differentiated cancer;

2 grade. Cancer of the moderate degree of maturity;

3 grade. Low-differentiate cancer.

4 grade.Undifferentiated cancer

International classification of cancer

The concept about the stage of the process in ENT oncology: the stage of the process can be I, II, III, IV; it is determined in the form the combinations of symbols T (tumor) (1-4), N (nodulus) (0-3), M (metastasis) (0,1).

Neoplasms of the upper respiratory tract average 3-4 % of all tumours localization. Tumours of larynx average more than half neoplasms of upper respiratory tract, tumours of pharynx are on the second place, tumours of nose and paranasal sinuses are on the third place. Neoplasms of ear are met much rarely.

Benign neoplasms are characterized by high degree of differentiation, not infiltrative and not destroying growth (even during rapid growth); they don't give metastasis, don't relapse and are resistant to radial therapy.

Benign tumours of upper respiratory tract and ear have different structure, because they may develop from all tissues forming these organs. It may be epithelium, soft tissues, osseous, cartilaginous, nervous tissues. Papillomas, hemangiomas and fibromas are the most frequently occurred benign tumours of nose , pharynx and larynx. In the paranasal sinuses which are affected by benign tumours more rarely than nasal cavity, osteoma is usually found. Osteoma usually becomes localized in frontal sinus, rare in the ethmoid sinus. Benign odontogenustumours, such as cementoma are usually occurred in maxillary sinus.

Papilloma is on the first place among the most frequently occurred benign tumours of upper respiratory tract. This tumour develops from flat and transitional epithelium. Depending on quantity of connective tissue in tumoursstroma, tumour may be soft or hard. The most often papilloma becomes localized in larynx, and may occur at any age. Children are effected by papilloma between a year and half and five years old. Boys are affected twice more often than girls, men are affected a four times more often than women.

Multiple papillomas are found on vocal cords, extend down to subglottic space and trachea, restrict gap of larynx and cause difficult breathing. During first five years of child's life papilloma grow fast, often relapse in spite of therapy, but almost are never malignant. During puberty papillomas may disappear spontaneous. At adult papilloma of larynx is solitary formation on vocal cord with slowly growth. Hard papilloma with proliferous crawling growth is found in every fourth case. Such growth causes transformation papilloma to flat (squamous) cell carcinoma. It is found in 15-20% and gives grounds to regard papilloma of larynx at adult as obligatory precarcinoma.

Vascular tumour among benign tumours of upper respiratory tract and ear are the second (take second place). It is usually hemangioma. Angiomas are distinguished in capillary (of arterial vessels), cavernous (of venous vessels) and also there are lymphangiomas. Hemangioma usually becomes localized in nose and pharynx, more rarely in larynx and ear . As a rule it has wide base ,especially in pharynx. It we want establish a cause of nasal bleeding, we should remember about vascular tumour and thoroughly carry out rhynoscopy after control of bleeding. Such benign tumour as fibroma is found mainly in larynx and nasopharynx. In larynx fibroma proceeds benignly, it is usually solitary tumour, like millet or no bigger than a pea. It settles down on free side of vocal cord. Fibroma of larynx manifests by violation of voice, sometimes cough and very rarely hard breathing (when the tumours is big like cherry). Fibroma is removed by endolaryangeal access during laryngoscopy with laryngeal forceps.

Fibroma of nasopharynx is the most often tumour of this localization. It is also called angiofibroma or fibroma of skull base.

Tumour is occurred at boys and youths; it is found in of nasopharynx, often penetrates in nasal cavity through choanas. This tumour with expansive growth causes atrophy of osseous walls (in consequence of compression) and can grows in cavity of skull. Fibroma of nasopharynx grows rapid and often relapses even after radical removal of tumour. Both these circumstances let us fall youth angiofibroma under the category of border tumours. Clinic of nasopharynx fibroma is enough typical: increasing difficulty of nasal breathing , then impossibility of nasal breathing through one nasal passage (then through both passage), stuffiness in the ear, relapsing nasal bleeding. During posterior rhinoscopytumour of purple colour is determined and during

palpation we can find that the tumour is solid and uneven. Owing to superficial arrangement of vascular vessels investigation of pharynx quite often is accompanied by bleeding.

Let's pay attention to another tumour. It is tumour of drum glomus in the region of vena jugularis bulb and it called tympanojugularparaganglioma. At onset of the disease the tumour is showed itself by stuffiness in the ear and by subjective noises in it. During otoscopy we can find pink and bulging ear drum. As tumour grows and destroys bones the patient takes note of reduction hearing, dull pain in the ear, bleeding from the ear, paresis of facial nerve, dizziness, symptoms of damages of 9th,10th,11th,12^{th} cranial nerves. It is difficulty to diagnose tympanojugularparaganglioma. Usually we can give diagnosis in several year after beginning of tumour's growth. Main treatment is surgical.

Malignant tumour. Frequency of damages of different parts of upper respiratory tract and ear by malignant tumours is equal: larynx is affected in 67%, pharynx in 18 %, nose and paranasal sinuses are affected in 14%,ear in 1% of observations. Frequency of damages by tumours differs at children: nose and paranasal sinuses are affected in 35%, nasopharynx in 30%, oropharynx in 19%, meddle ear in 16% of cases, cancer of larynx at children occur very rarely.

The most often malignant tumours are found in larynx at adult, and almost always it is flat (squamous) cell carcinoma, rarely it is basal cell carcinoma or sarcoma. Cancer of larynx is on the fourth place among all cancers at men. It is not as frequent as cancer of stomach, lungs and esophagus. At women cancer of larynx is on one of the last places among other cancerous diseases. Many patients with cancer of larynx are admitted for treatment on last stage of disease. Clinic of cancer of larynx in beginning depends on localization of tumour. Patient's complaints are the very usual, occurring in many disorders of larynx. So, when the tumour is found on epiglottis, patient complains to sensation of discomfort on swallowing, a feeling of a foreign body in the throat. Pain in the throat (spontaneous or on swallowing) disturbs the patient as tumour continues to grow and ulcerate, also the pain radiates to the ear. Small nodular tumour of pale-pink or grey colour is found during laryngoscopy, quite often with ulceration areas covered by coat. It is difficult to find tumour on endophytic growth of tumour, especially in the region of epiglottis's base. That is why in questionable cases it is necessary to perform larynogoscopy with retraction of epiglottis after anesthesia. The beginning of cancer of larynx's upper floor (cord of vestibule, ventricle of larynx) doesn't accompany lonely by subjective symptoms, excepting such light symptoms: changing voice's trimbre, weakness. Laryngoscopy reveals thickening of vestibule cord, more marked in its front region. Vocal cord may be covered by enlarged cord of vestibule or by infiltrated mucous membrane of ventricles of larynx.

It takes place when exophytic growth of tumor is observed. In case the growth of tumor is endophytic the vocal fold is pink, has diffusive intumescence, sometimes it may have spindle shaped form. The mobility of the affected fold can be limited. The unilateral affection is a very important diagnostic symptom of the initial stage of the disease. Unilateral localization makes it possible to exclude the inflammatory process and it is necessary to make a differential diagnosis with such infectious granulomas as tuberculosis and syphilis. The final diagnosis is made after carrying out biopsy.

At the initial stages of the affection of the lower part of the larynx the symptoms are very scanty and vague. Large tumor causes the breach of vocal and then of respiratory functions such as the muffled voice, slight dyspnea, hoarseness and increasing difficult breathing. The tumor which grows exophytic may be discovered with the help of the indirect laryngoscopy.

The symptoms which appear with the further growth of tumor very little depend upon the region of the initial localization. They become common for cancer of larynx (hoarseness or aphonia, cough, sanguinolent sputum, pain on swallowing which irradiates in the ear, increasing difficult breathing). The tumor sprouts in cartilages of the larynx, causing chondroperichondritis. The further growth of the tumor leads to decompensated stage of laryngostenosis; patients lose weight because of cancerous intoxication, there is an erosive bleeding that often causes death. Metastatic spreading is carried out in the regional lymphatic apparatus of the neck, distal metastases are found very seldom and lately.

The choice of the method of treatment depends upon the stage of cancer of larynx, its localization and character of tumoral growth. The treatment is combined or even complex. It is

better to use the combined treatment together with radiotherapy at the first stage when there is limited spreading of the tumor. If a patient undergoes half of the course of radiotherapy and the tumor becomes smaller than half as much, then radiotherapy is continued, if there is no effect, the surgical treatment is recommended to the patient. When you prescribe the radiotherapy for your patient you should take into consideration that cancer of the middle part of the larynx is more radiosensitive, cancer of the vestibule of the larynx is less radiosensitive and the cancer of the lower part is radioresistant. In case of spreading tumors of the first part the surgical treatment is carried out. There are various surgical interventions as to the cancer of the larynx depending on the spreading of the tumor:

a) at the initial stages of cancer of the larynx middle part it is possible to carry out endolaryngeal removal of the tumor;

b) in case of the thyreotomy or laryngofissure when there is limited affection of the middle part of the larynx, the external access of tumor removal is used. This treatment is also possible in case of pharyngotomy (suprahyoid, infrahyoid or lateral) and affection of vestibular part of the larynx and lower part of pharynx;

c) when there are limited affections of larynx with the tumor, larynx resection is used (horizontal, diagonal, frontal, sagital).

This operation is kind of saving of organ.

d) Laryngectomy or extirpation of the larynx is the removal of the whole organ; it is used when it is impossible to preserve the organ.

e)Dilated laryngectomy is the removal of the larynx with the of the tongue.

Comminuted treatment consists of use of the surge and radial methods. Including this fact there are possible the next variants as so:

a) operation with following radiotherapy of the regional metastasing zone as a prophylaxis;

b) radiotherapy at the first stage and if there is no an excessive effect after the half doses affection, then the surgical operation is indicated;

c) the “sandwich”- radiation: at first- the gamma-therapy half doses, then operation and the second doses of the gamma-therapy on to the metastasing region.

Chemotherapy is usually used as a supplemented method to the basic one – radial or surgical.

Results of treatment of a cancer of larynx are estimated by the fifth-years survival rate all observations report that in all stages of diseases the most effective is a combined treatment as this – operation with following irradiation of the regional lymphatic outflow region.

MALIGNANT AND HIGHER MALIGNANT TUMORS OF THROAT.

By the rate of morbid affection cancer is of the first place, but tonsillary tumors occupy the second ones. The differentiated malignant connective and especially neuroectodermal tumors of pharynx are rarely registrated . All these neoplasms, more oftenly, develop in rhinopharynx – 53%, some rarely in oropharynx – 30%, some more rarely – 17% of observations in laryngopharynx.

In pharynx the most frequents is an endophytic carcinoma – the tuberous infiltrate with ulceration, more rarer is an exophytic form – the morphologic formation on large base as a cauliflower. Also there is observed the mixed form.

If the tumor localized in rhino-pharynx, then the early signs are the difficult nasal breathing, headache, tinnitus, decreased hearing, but in case of the neoplasm ulcerating there are a mucous bloody and sanguine purulent nasal discharges. As a consequence, if the tumor fills in the rhinopharyngeal cavity, the clinic features are the changed vocal timbre, rhinolalia clause. Symptoms of the cranial nerves impairment report about a prolonged terminal neoplasm process.

For the oropharyngeal carcinoma at the early stages there are sensation of foreign body, painfulness during swallowing (oftenly accompanied with irradiation into ear. Then the signs apply which are caused with tumoral germination and involving of the chews, root of the tongue and by collateral edema the larynx, too. Decomposition of the tumor and pain increasing during swallowing lead to hemoptysis and cachexia.

Cancer of the laryngopharynx usually develops in the recesses performs, some more rarely on the posterior wall and retrocartigeal region. At first a patients complain of sensibility of foreign body during swallowing and periodical pains in throat. Tumoral germination is accompanied with symptoms of laryngeal affection – hoarseness and difficult breathing. Also, there are a narrowing of the recesses performs and accumulation of saliva inside it, but in case of the postcricoidcarcinoma – moreover there is an edematic arytenoid cartilages and, oftenly, a rotation of larynx around the vertical axis.

Cancers of pharynx have a tendention to frequent metastasing. Regional metastases appear in the lymphonodes of neck - the profound jugular chain and oftenly in the retropharyngeal lymphatic nodes. Distant metastases are in bones, lung, liver and other organs.

The laryngeal cancer diagnoses is based on anamnesis, endoscopic and radial examination. But the biopsy means mainly in this diagnosing. Differential diagnosis should be with the infections granulomas.

Treatment of the cancer of the rhinopharynx is complex: irradiation and chemotherapy. If the tumor is on the posterior wall of pharynx, the cryosurgery method is indicated. For treatment of the cancer of the laryngopharynx is better to use, also the combined, but in another consequence – at first by surgical operation (enlarged extirpation of the laryngopharynx with resection of the cervical part of gullet) with following radiotherapy.

Among the pharyngeal neoplasms, there is special and most malignant group – the lower differentiated (radiosensitive) tonsillary tumors. They developing out of the lymphoid tissue compounds and being a higher radiosensitive, these tumors, moreover, have a supplementary characterize clinic symptoms. Tier clinic signs are:

1. rapid infiltrative germination;
2. early metastasing in to regional lymphatic nodes, besides these metastases, as a rule , enlarged more quickly than the primary tumor;
3. a very excessive tendency to generalization manifesting as a multiple metastases in distant organs.

More often the radiosensitive neoplasms develop out of the palate tonsils, but rarely – the pharyngeal, tubal, lingual ones. Sometimes, the atypical localization of the primary tumors occurs, it develops in the mucous membrane of nose, larynx, trachea, where the neoplasm growths out of lymphoid tissue. At first – there is observed an enlarged one of tonsils. If the tumor locates on the palate tonsil, it usually, wouldn't disturb patient, but more rarely it would cause a sensation of foreign body in throat. Unlike the vulgar hypertrophy, this process is always one-sided. In case of the pharyngeal tonsil tumor, there is a progressing difficulty of nasal breathing, but if there is an affection of the tubar ones there is dull hear on homolateral side. The enlarged tonsil has a densive elastic consistantion during palpation. Then, tumor tends to enlargening and involves a surrounding pharyngeal tissues to the tonsil so, that it oftenly ulcerates and is accompanied with pain. The primary tumor may be enlarged over the pharynx and involves the gingival, root of the tongue, surrounding bones, but in case of affection of the rhinopharynx – into nasal cavity. In that case a chewing and swallowing are difficult. Tumor decay is accompanied with very harsh nasty odor out of oral cavity.

Oftenly, the first patient's complains of is a metastatic enlargening of the lymphonodes. If the primary neoplasm is in the palate tonsils, then the regional metastases develop inside the retromaxillary lymphatic nodes. But in case of the pharyngeal tonsil tumor, then the regional metastases are in upper lateral cervical lymphatic, usually, in both sides. Some patients have a primary tumor without metastasing, but with tendency to germination and involving of the base of the skull - so called "secondary form" of the tonsillary tumors. Neoplasm of the lingual tonsil manifests with regional metastases in the upper lymphonodes of the profound jugular chain of neck which is on a place of the common carotic artery bifurcation. They are discovered as a densive elastic nodes which tend to quickly enlargening, compressing neural and vascular trunks so, that causing an acute pain and collateral edemas.

At present, the general therapeutic method for the radiosensitive tonsillary tumors is a radiotherapy during an adequate chemotherapy. Relapses of the tonsillary tumors, oftenly, are not on a place of the primary focus, but in region of the regional and other lymphonodes (direct

organs). During relapses of the primary neoplasm and regional metastases so, there is indicated a recurrent radiotherapeutic course.

Among malignant tumors of nose and nasal sinuses, the most higher rate of localization is the maxillary sinus (2/3 of all observations), more rarely there is affected the ethmoidsinus (1/5 of all observations) and nasal cavity (1/8 of observations);very rarer localization of malignant tumor is in the frontal sinus. Into the sphenoidal sinus, the tumor germinates usually from the nasal cavity or maxillary sinus.

At the first stages the malignant tumors of nose and nasal sinuses, as a rule, aren't diagnosed, because of a patients complains of sense of closed nasal breathing and sneezing are accounted for a signs of inflammatory process. Apparently, therefore the most higher rate (60% and over) of mistakes during the primary diagnosis of the upper respiratory tract malignant tumors just occur in neoplasms of nose and nasal sinuses, and besides a some favorable prognosis after treatment is provided by any therapy for fifth-years survival rate no more than in 35% of patients.

More oftenly, in nose and nasal sinuses there are an epithelial neoplasms, that are a various carcinomas, but the connective tumors (sarcomas) are more rarer. Sometimes, there are a lover differentiated tonsillary tumors in nose – they are: reticulosarcoma, lymphoepithelioma, also as a rarer tumors as – melanoblastoma and the specifical for nasal cavity – esthesioneuroblastoma.

Initial symptoms of the nasal malignant tumors are a patient's complains of the one-sided sneezing, difficult nasal breathing, then there are a purulent and blood-purulent nasal discharges, headache without specific localization, teethache. Neoplasms, with primary lie in the maxillary sinus or spreading to there from nasal cavity, have a clinic features of the stomatologic disease (teethache, edema of the alveolar processus and cheek region), owing to these, oftenly, there are fulfilled an extraction of tooth, cut of mucous membrane of gingiva and other operations. Tumors of nose and nasal sinuses, sometimes, at first manifestate with late symptoms: displacement of the eyeball, exophthalmos, diplopia, partial ophthalmoplegia (limited internal mobility of the eyeball), edematic internal angle of eye, hyperlacrimation, depraved vision, neuralgia. These sins are a patient's course of seeing a doctor who should to suspect a secondary affection of eyeball and send a patient to an otorhinolaryngologist.

Diagnosing is fulfilled with account of the have above-mentioned symptoms, also on a base of data of the anterior and posterior rhinoscopy with gives possibility to see antumoral formation on a large base and has a grey-pink or reddish colour (but melanoblastoma is dark greyish-brown), tuberous, bleeded during palpation. The radiologic examination has an important part in diagnosing. It includes of the surveying and contrasted roentgenography, tomography, angiography, radioisotopic visualization - there are osteal destructions and focus higher concentration of the tumorotrophicradiopharmopreparation on the gamma-scintigramm that reports about tumoral genesis of the process.

Differential diagnosis of the malignant tumors of nose and nasal sinuses should be not only with benign neoplasm's and rhinosinusitis, but the infections granulomas: syphilis, tuberculosis, scleroma must be differentially excepted. There may be helpful a specific serologic reactions, dermal syphilitic manifestations, tuberculosis foci in other organs, examination of the nasal discharging microflora and so on.

Treatment of the malignant tumors of nose and nasal sinuses should be comminuted, including of surgical and radial therapy. Oftenly, both these general methods are confirmed by chemotherapy (general and regional).

Surgical operation, as a rule, may have a large volume, but more frequently with the external approach – the Moure's, Preucing's operations and other modifications of the rhinotomy. If it's necessary the rhinotomy is supplemented with the exenteration of orbit, enucleation, maxillary resection. After this operation formed large defect of tissues and morphologic elements in the maxillofacial region now is removed with use of complex prothesis and synthetic materials.

Malignant tumors of an ear are registrated in 0,04% of all neoplasms cases and in 0,5-1% of the upper respiratory tumors ones. Inspite of its lower rate, we need to describe them, because of they, for all that, are observed in adults and infants, are very aggressive and very lower therapeutic effect. That is enough, that the fifth-years survival rate of patients isn't over 8-10%.

If the all ear's malignant tumors compose 100%, then 85% - are tumors of the auricle, 10% - external acoustic meatus and 5% - middle ear. In this localization, the most often neoplasm are a cancer, sarcoma and melanoblastoma.

Cancer of the external acoustic meatus is as a warty nodes or flat ulcer with legibly limited infiltrated borders. By its growing the carcinoma occupies the floor of the auricle in whole, it may involve a lateral surface of head and neck. Germinating into the external acoustic meatus it causes an acute headache like as in the furuncle. The following growing of the external ear carcinoma is accompanied by infiltration and necrosis of basal and surrounding tissues, with large defects formation.

Carcinoma oftenly develops as a weeping eczema or pale granulations on thick base, cowered with easy desquamated crust, if the tumor located in the external acoustic meatus. Patients complain of itch, but then there is a progressively increased pain of the floor of the auricle and external acoustic meatus. At least a carcinoma of the external acoustic meatus is a dermal cancer, but its prognosis (despite to the dermal cancer of any other localization) is unfavorable and poor, even if we use a combined therapy. At first, there is used a radiotherapy, then an extended surgical operation. Inspite of the operative radicalism, these patients live only 1-2 years after treatment.

Cancer of the middle ear, usually, develops during the chronic purulent otitis and its clinic current an early stages has no specific features and doesn't differ from the purulent inflammatory process of the middle ear.

How do we may suspect a malignant process of the middle ear? It may be suspected on a base of frequent and rapid relapsing of granulations (which are really a tumoral tissue), infiltration in the osteal part of the external acoustic meatus, concentrically narrowing its lumen, rough paresis or paralysis of the facial nerve, limited mobility of mandible, enlarged retromaxillarylymphonodes.

To discover a malignant tumor of the middle ear in relatively early terms, then the extracted from ear tissues must be always histologically examined. Besides, it should be multiply conducted!

Treatment of the middle ear cancer as in the external ones is combined : the preoperative gamma-therapy, in II-III weeks - the intended radical operation of ear, then – the postoperative gamma-therapy. If it is possible (in case of there is no bleeding, presence of isotopics), then a doctor introduce a radioactive preparations into the operative wound.

All these methods of treatment have a some effective results. That is localization of tumor in depth and layer of osteal tissue connected with an important vital organs (large arterial and venous vessels, labyrinth, brain) leads to less using possibility of radial and surgical operation. Therefore, the malignant tumors of ear are one of the most poor chapters of the otorhinolaryngo-oncology.

Classification of lymph nodes of the head and neck

1.Nodes of upper horizontal chain

(a) Submental nodes. They lie on the mylohyoid muscle in the submental triangle, 2 to 8 in number. Afferents come from the chin, middle part of lower lip, anterior gums, anterior floor of mouth and tip of tongue. Efferents go to submandibular nodes and internal jugular chain.

(b) Submandibular nodes. They lie in submandibular triangle in relation to submandibular gland and facial artery. Afferents come from lateral part of the lower lip, upper lip, cheek, nasal vestibule and anterior part of nasal cavity, gums, teeth, medial canthus, soft palate, anterior pillar, anterior part of tongue, submandibular and sublingual salivary glands and floor of mouth. Efferents go to internal jugular chain.

(c) Parotid nodes. They lie in relation to the parotid salivary gland and are extraglandular and intraglandular. Preauricular and infraauricular nodes are part of the extraglandular group. Afferents come from the scalp, pinna, external auditory canal, face, buccal mucosa. Efferents go to internal jugular or external jugular chain.

(d) Post auricular nodes (mastoid nodes). They lie behind the pinna over the mastoid. Afferent come from the scalp, posterior surface of pinna and skin of mastoid. Efferents drain into

infraauricular nodes and into internal jugular chain.
(e) Occipital nodes. They lie both superficial and deep to splenius capitus at the apex of the posterior triangle. Afferents come from scalp, skin of upper neck. Efferents drain into upper accessory chain of nodes.
(f) Facial nodes. They lie along facial vessels and are grouped according to their location. They are midmandibular, buccinator, infraorbital and malar (near outer canthus) nodes. Afferents come from upper and lower lids, nose, lips and cheek. Efferents drain into submandibular nodes.
2. Lateral cervical nodes
(a) Superficial group. It lies along external jugular vein and drains into internal jugular and transverse cervical nodes.
(b) Deep group:
a) Internal jugular chain. Lymph nodes of internal jugular chain lie anterior, lateral and posterior to internal jugular vein and extend from the digastric muscle to the junction of internal jugular vein with the subclavian vein. They are divided into upper, middle and lower groups. Upper group (jugulodigastric node) drains oral cavity, oropharynx, nasopharynx, hypopharynx, larynx and parotid. Middle group drains hypopharynx, larynx, thyroid, oral cavity, oropharynx. Lower jugular group drains larynx, thyroid and cervical esophagus.
b) Spinal accessory chain. It lies along the spinal accessory nerve. Upper nodes of this chain coalesce with upper jugular nodes. Spinal accessory chain drains the scalp, skin of the neck, the nasopharynx, occipital and postauricular nodes. Efferents from this chain drain into transverse cervical chain.
c) Transverse cervical chain (supraclavicular node). It lies horizontally along the transverse cervical vessels in the lower part of the posterior triangle. The medial nodes of this group are called scalene nodes. Afferents to those nodes come from the accessory chain and also infraclavicular structures, e.g. breast, lung, stomach, colon, ovary, testis.
3. Anterior cervical nodes
a) Anterior jugular chain. It lies along anterior jugular vein and drains the skin of anterior neck.
b) Juxtavisceral chain. It consists of prelaryngeal, pretracheal, and paratracheal nodes.
Prelaryngeal node lies on cricothyroid membrane and drains subglottic region of larynx and pyriform sinuses. Pretracheal nodes lie in front of the trachea, deep to pretracheal fascia, and drain thyroid gland and the trachea. Efferents from these nodes go to paratracheal, lower internal jugular and anterior mediastinal nodes. Paratracheal nodes (recurrent nerve chain) lie along recurrent laryngeal nerve and drain the thyroid lobes, subglottic larynx, trachea and cervical esophagus.
Lymph nodes not clinically palpable
a) Retropharyngeal nodes. They lie behind the pharynx and are divided into lateral and medial groups. Lateral group lies at the level of atlas, close to the base of skull. Medial group lies near the midline but at a lower level. Retropharyngeal nodes drain the nasal cavity, paranasal sinuses, hard and soft palate, nasopharynx, posterior wall of the pharynx and send efferents to the upper internal jugular group.
b) Sublingual nodes. They lie deep along the lingual vessels and drain anterior part of the floor of mouth and ventral surface of tongue. Lymphatic from these nodes end in the submandibular or upper jugular nodes.

Control questions for given topic:
1. The signs of malignant tumors.
2. Morphologic classification of the tumors of the upper respiratory tract.
3. The forms of tumors growing.
4. Lymph nodes of the head and neck, classification.
5. Malignant edemas of the nose and paranasal sinuses. Clinics, treatment.
6. Contemporary methods of examination of paranasal sinuses in their tumor damage.
7. Low differential (tonsillar) edemas. Enumerate and characterize them.
8. Cancer of the nasopharynx. Early clinical signs of them.
9. Carcinoma of oro- and hypopharynx, hystological characteristic, clinical features, diagnosis.

10. Cancer of larynx. Enumerate the stages. Name the main clinical symptoms of different layers of the larynx damage. Methods of surgical treatment. Vocal rehabilitation after total laryngectomy.
11. Methods of therapy of malignant tumors of ENT organs.
12. Radiotherapy in head and neck cancer. Types and modes of radiotherapy. Care of patient during radiotherapy.
13. Types of chemotherapy. Pretreatment work up of the patient.

Exersises for self control of given knowledges

1. Name the groups of the tumors of upper respiratory tract (according to morphological classification):

a. higher differentiated neoplasms
b. differentiated neoplasms (malignant tumors)
c. non-differentiated (tonsillar) neoplasms
d. outorgans tumors of neck

2. What concerns to differentiated neoplasms?

a. benign tumors
b. connective tumors
c. epithelial tumors
d. neurogenal tumors
e. terminal neoplasms
f. tonsillary tumors

3. What signs allow to suspect the malignant tumor of the middle ear?

a. chronic foul-smelling discharge especially when blood-stained
b. pain which is usually severe and comes at night
c. facial palsy
d. friable, haemorrhagic granulations or polyp
e. appearance or increase in deafness or vertigo

4. What kind of malignant tumors most frequently meet in the cavity of a nose?

a. carcinoma
b. malignant melanoma
c. olfactory neuroblastoma
d. haemangiopericytoma
e. lymphoma
f. plasmacytoma
g. sarcomas

5. What early features of maxillary sinus malignancy?

A, b, c.

6. What ways of spreading of malignant tumors of maxillary sinus?

a, b, c, d, e, f, g

7. What methods of diagnosis of tumors of paranasal sinuses?

a. radiograph of sinuses
b. punction of sinuses
c. CT scan
d. Biopsy
e. Waiting over the clinical picture

8. On what methods diagnostics of laryngeal cancer is based?

A, b, c, d, e, f, g, h

9. What modes of radiotherapy do you know?

A, b.

10. List the types of radiotherapy:

1. 2. 3 (a,b).

11. List the types of chemotherapy:

1, 2.

Task 1. The patient 47 years complains on raucous voice, which disturbs about a half-year. Considered, that it is connected to smoking, however after has thrown to smoke three months ago, raucous voice has not passed off.
Objectively: in a pharynx of pathological changes is not defined. Laryngoscopy: Is determined tubercle infiltration on right voice fold, the mobility of fold is appreciably limited. The voice fissure is wide enough for breath. In infraglottic space of change are not defined. From the ENT and other organs other pathology is not revealed. What prospective diagnosis? What additional inspections are necessary? How to treat the patient?
Task 2. The patient 45 years complains on raucous voice during last two month. The pain at swallowing is absent. The anti-inflammation treatment (inhalation, gargling, antibiotics), carried out during two weeks, effect has not given. Laryngoscopy: on free edge of anterior two thirds hyperemic left voice fold there is tubercle formation on the wide basis. Small restriction of mobility of the left half of larynx. The right half of larynx is not changed. The voice fissure is sufficient for breath. Regional lymph nodes without peculiarities. Reaction of Wassermann is negative. What prospective diagnosis? What additional methods of examination?
Task 3.The patient 42 years complains of a pain in the neck, absence of breath through natural ways, aphonia. About six months ago patient has noted occurrence of raucous voice, to the doctor did not address, the treatment was not carried out. Raucous voice gradually increased, the pains have appeared at swallowing, difficulty of breath. Month ago during acute difficulty of breath was made tracheotomy. Laryngoscopy: tubercle infiltration occupies the right half of larynx, anterior comissure and passes to the left half of larynx. Infiltration completely obturates larynx cavum, the voice fissure is not visible. The mobility of both half of larynx is absent. Has swelled of a mucous of arytenoid folds and tongue surface of epiglottis. In examination: the corner of thyroid cartilage is deformed, above incissuraof cartilage is defined the infiltration. Roentgenogram of breast is normal. Reaction of Wassermann is negative. What diagnosis? How to treat the patient?

Task 4. The patient 63 years has addressed to otorhinolaryngologist with the complaints to difficulty of breath, pain in a throat at swallowing with irradiation at left ear. Is sick about five years. In the beginning the pains in a throat were periodic. Last three months the difficulty of breath have joined to the pain in a throat . Objectively: in larynx there is tubercle formation occupying left false and voice cords with transition through anterior comissure on right voice cord. The left half of larynx is limited in mobility. The voice fissure is considerably narrowed. At walking occurs difficulty in breathing, it is marked retraction of supraclavicular and jugular fosses. Regional neck lymph nodes are not increased. The prospective diagnosis? What are necessary examinations?

Answers on self-control exercises:

1. a, b, c; 2. B, c, d; 3.A, b, c, d, e; 4. A, b, c, d, e, f, g;
5.a. nasal stuffiness
b. blood-stained nasal discharge
c. facial paresthesias
6. a. medial spread to nasal cavity
b. anterior spread to the face
c. inferior spread to the alveolar processes
d. superior spread to the orbit
e. posterior spread to the pterigomaxillary fossa
f.intracranial spread through ethmoids, cribriform plate or foramen lacerum
g. lymphatic spread to the submandibular and upper deep cervical nodes.
7. a, b, c, d;
8. a. history
b. indirect laryngoscopy
c. examination of the neck
d. radiography
e. CT scan

f. Direct laryngoscopy
g. Microlaryngoscopy
h. Supravital staining and biopsy
9. a. external beam therapy or teletherapy
b. brachytherapy
10. 1. Curative radiotherapy
2. Palliative radiotherapy
3. Combination radiotherapy:
a)radiotherapy and surgery (preoperative and postoperative)
b)radiotherapy and chemotherapy
11. 1. Palliative chemotherapy (with an aim to relieve symptoms and to prolong patient's life)
2. Adjuvant chemotherapy (before, during or after treatment with other modalities)

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Electronic information resources

1. World Health Organization. URL: www.who.int/ru/index.html.
2. European Regional Office of the World Health Organization. URL: www.euro.who.int.
3. www.ama-assn.org – American Medical Association
4. www.dec.gov.ua/mtd/home/ - State Expert Center of the Ministry of Health of Ukraine
5. http://bma.org.uk– British Medical Association
6. www.gmc-uk.org- General Medical Council (GMC)
7. www.bundesaerztekammer.de – German Medical Association

Practical lesson No. 16
Topic: "Injuries of the nose. Nosebleeds".

Purpose: to get acquainted with the functional importance of the nose, to create an idea of the architecture of the external nose, the relationship of the named organ with the surrounding anatomical formations. To achieve the formation of a record of a highly professional doctor who understands the issues of injuries of the nose and paranasal cavities from the position of in-depth knowledge of the clinical, anatomical, physiological aspects of the pathology being studied. Also, education of the professional responsibility of the doctor, the ability to accurately assess objective methods of researching the nose and nasal cavities, the significance of these studies for legal purposes; psychological and professional rehabilitation of the patient.

the student should know:

- clinical and topographical anatomy of the nose and nasal cavities, features of the vascularization of the nose and the places of the most frequent nosebleeds; methods of diagnosing lesions of the nose and nasal cavities;

be able:

- to master the methods of nose examination and to conduct anterior and posterior rhinoscopy;
- determine the cause and place of nosebleed; "read" radiographs of the bones of the nose and the nasal cavities; extinguish the bleeding vessel of the nasal septum with silver preparations; perform anterior and posterior tamponade of the nose; apply a sling-shaped bandage; prescribe adequate hemostatic therapy.

Basic concepts: damage to the soft tissues and bones of the nose is quite common both as an independent injury and with combined damage to the bones of the temple. At the same time, nosebleeds that are dangerous for the health and life of patients may occur, in which first aid should be provided by both an otorhinolaryngologist and a general practitioner. In addition, severe nosebleeds can occur with a number of general somatic diseases, in connection with which the expansion and deepening of students' knowledge is necessary to provide emergency care for this pathology.

Equipment: tables, dummies, simulators, multimedia presentations, video films, tool sets, tuning forks, tomograms, radiographs, etc.

Plan

№№	The name of the composition of the class	Hour
I.	Organizational moment (greetings, checking those present, announcing the topic, the purpose of the lesson, motivating students to study the topic).	7
II.	Control of supporting topics.	38
2.1	Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units).	8
2.2	Questions (test tasks, problems, clinical situations) to check basic knowledge on the subject of the lesson.	30
III.	Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.).	40
3.1	Content of tasks (tasks, clinical situations, etc.).	20
3.2	Recommendations (instructions) for performing tasks (professional algorithms, orienting maps for the formation of practical skills and abilities, etc.).	3
3.3	Requirements for work results, including to registration	2
3.4	Control materials for the final stage of the lesson: problems, tasks, tests, etc. (if necessary).	15
IV.	Summing up.	5

Tasks for checking the advanced level of knowledge-skills on the subject of the lesson:

1. Where is locos Kisselbachi located.
A. At the front end of the lower concha
B. In the bony part of the nasal septum
C. In the cartilaginous part of the nasal septum 2 cm from the entrance to the nose
D. On the border of the cartilaginous and bony part of the nasal septum
E. On the delicate wall of the nasal cavity
2. A 24-year-old patient entered the clinic with difficulty in nasal breathing and nosebleeds. Suffers for 3 months. He was not treated, he sought help only after the frequency of nosebleeds increased. Rhinoscopy without features, because of the curvature of the nasal septum, it is not possible to examine the posterior parts. During fibroscopy, a tumor-like formation with an ulcer is determined, the formation covers the upper and middle part of the choana. Histological conclusion: poorly differentiated cancer of the nasopharynx. There were also nosebleeds after tamponade of the nasal cavity. What is your treatment strategy?
A. surgical removal of the tumor by external access
B. anterior nasal tamponade, ligation of the external carotid artery, then chemoradiotherapy
S. surgical removal of the tumor under visual control
D. antibiotic therapy
E. chemotherapy
3. A 65-year-old patient developed epistaxis against the background of a hypertensive crisis, which could not be stopped in an outpatient setting. What is the most likely localization of epistaxis in this case?
A. Posterior parts of the nasal septum
B. Nasal concha
S. The lower wall of the nasal cavity
D. Front sections of the nasal septum
E. None of the above
4. The patient was admitted to the clinic with profuse epistaxis. There was a nose injury eight days ago. During the examination, pallor, cold sweat, and tachycardia are noted. Anterior-posterior tamponade was performed three times in the Central Hospital, however, when the tampons were removed, the bleeding resumed. What should be the medical tactics?
A. Anterior tamponade of the nasal cavity
B. Carry out posterior tamponade
S. Urgently perform an ethmoidotomy
D. Conduct galvanocaustic of the vessel
E. None of the above
5. What are the treatment tactics for nosebleeds?
A. Urgent hospitalization of the patient
B. Application of tamponade, treatment of somatic pathology that caused bleeding
S. Urgent ethmoidotomy
D. Local remedies, tamponade, treatment of the disease that caused the nosebleed
E. None of the above
6. What are the tamponades of the nasal cavity?
A. Front
V. Zadnya
S. Polosna
D. Front and back
E. Posharova

Lesson content.
Relatively often, patients with injuries to the bones of the nose require urgent care. Injuries should be divided into isolated and combined (the latter are mostly found in wartime, which is caused by the use of strong means of impact on the enemy's manpower, as well as a large

number of vehicles). Injuries to the soft tissues of the nose require aseptic processing and suturing.
Injuries with damage to the bones of the nose can be divided into the following types:
AND). closed fractures of the nasal bones with displacement of fragments;
2). closed fractures of the nasal bones without displacement of fragments;
WITH). open fractures of the nasal bones without displacement of fragments;
4). open fractures of the nasal bones with displacement of fragments;
5). injuries of the nasal membrane;
6). combined injuries of the nasal skeleton with damage to adjacent areas (upper jaw, frontal and ethmoid bones, eye socket).
The main goal of the doctor who provided first aid to the patient is
correct and timely diagnosis, restoration of the shape of the nose and its
functions, stopping bleeding and liquefaction.
Contraindication to the immediate removal of crushed or crushed bone fragments in a severe general condition of the patient (severe combined injuries and, in particular, brain damage).
We believe that repositioning should be as early as possible, because after 6 hours from the moment of injury, inflammatory phenomena develop. And even later complications may arise.
Before providing assistance to a patient with a nose injury, deformity of the nasal bones (sinking, protrusion, crepitation) is found by palpation. A lateral X-ray of the nasal bones has great diagnostic value. First of all, repositioning is carried out, followed by stopping of bleeding, tamponade and treatment of skin damage. Restoration of the shape of the nose is carried out both externally and endonasally. When the bone fragments are displaced to the side, it is possible to adjust them with the thumbs. When pressing on the fragments or their displacement, if they return to their place, a kind of clicking is felt. Sometimes it is not possible to make a reduction with the fingers, and then they use rhinoclast. When the debris is displaced towards the nasal cavity, the endonasal method is used. As a rule, endonasal repositioning requires further anterior tamponade due to one or another intensity of bleeding, as well as fixation of repositioned fragments. In case of violation of the integrity of soft tissues, their primary surgical treatment is performed, after which sutures are applied to the skin. Fixing bandages are various according to the device: from use.
Leading symptoms of nosebleeds:
- dizziness;
- sharp general weakness;
- tinnitus;
- paleness of the skin;
- nausea;
- vomiting blood;
- bleeding from the nasal cavity (staple, gushing or capillary);
- during anterior rhinoscopy - blood clots in the nasal passages;
- during pharyngoscopy - leakage of blood along the back wall of the pharynx;
- tachycardia;
- weak pulse;
- drop in blood pressure;
- anemia
Treatment of nosebleeds:
- outpatient or inpatient;
- elevated position of the head;
- pressing of the wings of the nose to the membrane, coldness to the membrane and the back of the head;
- inserting a tampon into the nasal cavity with hydrogen peroxide;
- local application of vasoconstrictors and anesthetics;
- use of hemostatic agents (Vikasol, calcium chloride, epsilon-aminocaproic acid) - parenterally;
- local application of hemostatic agents (hemostatic sponge, hemophobin, feracryl, etc.)

- cauterization of the mucous membrane of the blood flow area with trichloroacetic acid, 20-50% solution of silver nitrate;
- electrocaustic of the bleeding area, or cryody;
- infiltration of the nasal septum with novocaine solution or alcohol-novocaine solution;
- anterior tamponade of the nose (including with a biological antiseptic tampon);
- hemostatic sponge (paste) Vasylieva;
- posterior tamponade of the nose;
- one-time tamponade of the nasal cavity and nasopharynx using an inflatable rubber tampon (according to S.N. Lapchenko).

Repeated use of splints-fixators made of keloid bandages, from stents, plaster - these splints are applied from 7 to 14 days. They are made of 6-8 layers of plaster bandage and are modeled according to the shape of the nose. The upper part is fixed with a bandage to the forehead, and the lower part covers the nose and is fixed with a sling-shaped bandage.

IN ENT pathologies, NOSE BLEEDS occupy one of the first places and can be caused by various reasons, so they should be divided into three groups: 1). traumatic 2. postoperative 3. spontaneous (without apparent cause) or symptomatic.

Postoperative bleeding occurs more often during operations on the nasal concha, nasal septum, or after operations on the paranasal sinuses.

The third group is a group of nosebleeds that are associated with other diseases, more often therapeutic ones, when bleeding is one of their symptoms. Bleeding that occurs with hypertension, atherosclerosis, hemophilia, thrombocytopenia, leukemia, agranulocytosis, anemia, nephritis, liver cirrhosis, heart defects, and infectious diseases (typhoid, flu, etc.) is included in such symptomatic ones. Endocrine disorders in women - vicarious bleeding. According to many authors, from 80 to 90% of all bleeding occurs from bleeding from the anterior parts of the nasal cavity, in particular from Kisselbach's plexus, and the other 20-10% - from other parts.

The following methods are used to stop bleeding:

AND). The method of pressing the nostrils with the fingers to the nasal membrane for 10-15 minutes can be considered the simplest, and sometimes effective, which causes compression and thrombosis of the affected vessel;

2). A hemostatic effect can be caused by inserting a cotton swab moistened with 3% hydrogen oxygen, 1% adrenaline into the nasal cavity from the bleeding side;

3). In case of intense bleeding, the blood vessel is inflamed. This is done with silver nitrate, chromic or trichloroacetic acids. With the "pearl leg" obtained at the end of the probe, the area of bleeding and the place of bleeding are circled on the mucous membrane.

4). If the methods described above do not help, perform tamponade (front and back).

For anterior tamponade, a "turunda" with a width of 2-2.5 cm and a length of up to 50 cm is used. Before the introduction of the turunda, it is filled with sterile petroleum jelly. With the help of nasal forceps or tweezers under visual control, the end of the turunda is inserted into the vertical part of the nose up to the stop, after which other layers of turunda are inserted "accordion" from top to bottom, filling the entire nasal cavity. The tampon is fixed externally with a sling-shaped bandage. The disadvantage of such tamponade is the possibility of parts of the tampon falling into the nasopharynx through the choanae. The tampon is placed in the nose for 24 hours, and when antibiotics are prescribed can be 48-72 hours. One of the variants of anterior tamponade can be considered the use of a pneumatic balloon. Its essence is that the rubber balloon, which is introduced into the nasal cavity, is inflated with air, and thus performs the role of a tampon. In cases of bleeding, due to hypertensive disease, sometimes you should not rush to stop bleeding with particularly high arterial pressure ku. Before hemostasis, you should always start with hypotensive therapy. Bleeding up to 50-100 ml can lower blood pressure and help stop bleeding more effectively.

When bleeding from the back of the nasal cavity, it is almost impossible to see the bleeding site, and anterior tamponade may be ineffective, as blood will flow through the choanae into the nasopharynx.

To stop bleeding from the back of the nose, the back tashonada is used in combination with the front, which guarantees a complete stoppage of nosebleeds. Posterior tamponade is performed as

follows: first, a tampon is prepared. Its size is determined approximately by the size of the first phalanges of the thumbs of the patient's hands folded together. A tampon is prepared, which is tied with a kapron thread with three free ends at least 30 cm long. Then a rubber catheter is introduced through the nose into the nasopharynx, and with the help of tweezers, it is taken out through the oral cavity. Two threads are tied to the removed end, which, when the catheter is pulled out, are passed through the nasopharynx and into the nose. By pulling the thread, the tampon is inserted behind the soft palate and tamponates the nasopharynx, obscuring the choanae. After posterior tamponade, anterior tamponade is performed. The threads that are brought out of the nose are tied around a gauze pad at the entrance of the nose to fix the tampon, and the third thread of the tampon is brought out through the mouth and fixed on the cheek with a patch. This thread will be necessary to remove the tampon from the nasopharynx. A tampon in the nasopharynx requires the appointment of antibiotics and should not be there for more than 48 hours, because such tamponade can cause complications from the middle ear.
In case of repeated bleeding, which cannot be stopped by all the measures listed above, destruction of the lattice labyrinth of the corresponding half of the nose with tamponade is used, and if necessary, ligation of the external carotid artery from the bleeding side.
Causes and predisposing factors of nosebleeds:
- trauma (also surgical);
- foreign bodies;
- tumors of the nasal cavity and nasopharynx;
- ulcer on the basis of syphilis, tuberculosis;
- strong cough, acute runny nose, sneezing;
- hypertension;
- superficial vessels;
- atherosclerosis of vessels;
- dryness and thinning of the mucous membrane of the nasal cavity;
- decompensated heart defects;
- blood disease;
- kidney disease;
- overdose of anticoagulants;
- intoxication;
- infectious diseases;
- lung disease;
- diseases of the liver and spleen;
- hypo- and avitaminosis (vit. K and C);
- professional factors (work with chromium, acid);
- decrease in atmospheric pressure;
- chronic alcoholism;
- overheating of the body;
- physical tension;
- intravenous, parenteral administration of 10% calcium gluconate solution;
- vitamins K, C, P;
- intravenous administration of epsilon-aminocaproic acid;
- Blood Transfusion;
- platelet mass transfusion;
- use of hypotensive agents;
- intravenous injection of 10% medical gelatin solution;
- putting tourniquets on the limbs for the purpose of depositing blood;
- intravenous administration of fibrinogen;
- ligation of external carotid arteries;

Methods of stopping nosebleeds:
Nosebleeds occur both with injuries of the nose and with various diseases (hypertensive disease, atherosclerosis, hemophilia, anemia, kidney and liver diseases, heart defects, infectious diseases). Nosebleeds can accompany damage to the facial bones (especially the nose), tumors,

and also occur with injuries of the nasal mucosa from strong picking, nose picking, excitement, overheating, and in other cases. Nosebleeds can lead to death, on ¬ example with hemophilia. In early childhood, nosebleeds are rare, in older age - more often and most often - in the period of puberty. In boys, they are noted more often than in girls, in the latter - often in the prepubertal period. Bleeding in diseases of the circulatory system and kidneys is arterial, in hemorrhagic diatheses it is capillary in nature (sieve-like seepage), in inflammatory diseases (fever), venous bleeding occurs. Most often (in 96% of observations), nosebleeds occur from the anterior-inferior part of the nasal septum, called Kieselbach's zone. This is due to the fact that the front-lower part of the nasal septum is distinguished by a significant development of the vascular network. Blood can flow into the nose from other parts of the upper respiratory tract - pharynx, larynx, trachea, lungs, from the middle ear, through the auditory tube. When recognizing the causes of bleeding, it is important to remember that the blood coming from the lungs comes out sometimes in such an abundant amount that part of it comes out in front of the nose, and vice versa, before it comes out, it sometimes gets into the lower parts of the respiratory tract or in stomach and, then ejecting from the bottom up, can arouse the suspicion of pulmonary or gastric bleeding. Therefore, recognizing the sources of bleeding is sometimes quite difficult. With nosebleeds, the blood is clean, of the usual type, its flow down the back wall of the pharynx is clearly visible, especially when the head is tilted back. In a number of cases (injury of the nose, infectious diseases), blood spills into the thickness of the mucous membrane of the nose and collects under it. This kind of hemorrhages are usually called hematomas, smaller ones are called ecchymoses, and spilled bleedings are called supilations. Hematomas in the nasal cavity can reach such a size that they completely fill the nose. Some experts consider nosebleeds to be a disease. At the same time, they mean habitual repeated nosebleeds for no apparent reason, which can lead to anemia and are the main suffering of the patient. Obviously, this type of bleeding should be classified as mucous membrane ulcers, minor trauma, dry rhinitis. It is important to emphasize that habitual nosebleeds can have a common cause: the main disease leads to local changes in the mucous membrane of the nose, and the latter are the cause of habitual nosebleeds. Emergency aid: When providing emergency aid, it is necessary, first of all, to calm the patient, which is very important, because with excitement, an accelerated heartbeat is noted, and this, in turn, increases blood loss. The patient should be seated or given a sitting position on the floor with the head slightly bent forward. Do not remove the pillow from under the patient's head or raise the lower end of the bed. These measures usually only increase the nosebleed. You can't throw your head back either. This makes it difficult for the blood to flow through the veins of the neck, as a result of which the bleeding can increase. In addition, in this position of the head, a false impression of reduced bleeding is created. In fact, blood usually flows into the pharynx, then enters the lower respiratory tract, and in the event of its ingestion, bloody vomit occurs. Aspiration pneumonia may develop. When providing emergency aid to the patient, it is necessary to unbutton the collar, loosen the clothes, open the window, make him breathe deeply, inhaling through the nose and exhaling through the mouth. However, it is important to ensure that he does not breathe too often, this leads to hyperventilation of the lungs and can cause an unconscious state. Breathing through the nose helps increase blood clotting and stop bleeding. Cold lotion or a bubble with ice should be placed on the bridge of the nose and the area of the nose, and a heating pad should be placed on the feet. If the bleeding continues, you can hold the wing of the nose against the nasal septum with your finger and at the same time apply an ice pack to the nose. If the bleeding is insignificant and comes from the Kieselbach zone, then these measures are usually enough. If the above measures do not help, then a ball with sterile cotton wool, gauze soaked in a 3% hydrogen peroxide solution, or a 0.1% adrenaline solution, or a 5% ephedrine solution, or 5% solution of ephedrine should be inserted into the front part of the nasal cavity. % fire retardant solution. By pressing on the wing of the nose, hug the ball to the nasal septum and hold it for 10-15 minutes. When providing assistance, it is necessary to ensure that the patient does not swallow blood.

If these measures are not enough, then they rush to cauterize the bleeding place with various caustic agents or nasal tamponade. Sometimes the area of bleeding is visible to the naked eye when lifting the tip of the nose. In this case, burning occurs not in the depth of the nasal cavity, but at the entrance to

the nose. It is very important to find out from which half of the nose the bleeding originated. It's not always easy. Blood often appears from both nostrils. In order to find the place of bleeding, you need to ask the patient to slightly lower his head down, blow his nose, then wipe the entrance to the nose and trace from which half of the nose the blood is pouring out. Such a position of the head, which prevents the flow of blood into the pharynx, also has the advantage that the swallowing and vomiting movements of the patient stop. This usually helps to stop the bleeding completely. Before cauterization, it is also very important to determine the place of bleeding. Blowing the nose cleans the nasal passages of blood clots, and the nose is examined with the help of a nasal mirror. If the place of bleeding in a typical place (Kieselbach's zone) is not detected, then it should be assumed that it is located in the back of the nose. In this case, you need to examine point number 2 - tuberculum septi - on the nasal septum, where there is an accumulation of cavernous tissue. In approximately 5-7% of cases, bleeding occurs from here. As soon as the site of bleeding is found, they cauterize to create a scab. A wide variety of caustics are used for this purpose: chromic, trichloroacetic, lactic acid, silver nitrate solution, alum, tannins, zinc salts; resort also to galvanocaustic or surgical diathermy. All these means differ from each other in the degree and depth of burning. Tannin, zinc, silver nitrate have weak caustic properties, and a superficial scab will form. Chromic acid, galvano-caustic and surgical laser therapy create a deep scab. Cauterization can be done at once from two opposite sides of the nasal septum, but so that the cauterization sites are not opposite each other. Excess acid on the mucous membrane is neutralized with a 2% soda solution. A scar is later formed at the place of burning. Since in a number of cases, after the usual cauterization, the resumption of bleeding is noted, we changed the classic technique: we cauterize not the bleeding place, but make a "halo" around it, after which the bleeding usually does not resume. This measure contributes to the obliteration of blood vessels on the approaches to the bleeding site. Recently, the following are successfully used for nosebleeds: ultrasonic disintegration, laser therapy, and cryoapplication with liquid nitrogen. Liquid nitrogen is a colorless, odorless liquid with a temperature of -196°C, non-flammable; at room temperature evaporates at a rate of 50 ml/h. Stored in a Dewar container (you can use a thermos). An exposure of at least 1 minute is required to cool the cryoprobe. (the end of cooling is determined by the cessation of "boiling" of nitrogen). The therapeutic effect of liquid nitrogen is strictly localized and limited to the affected area. It is believed that after exposure to liquid nitrogen, there are no pronounced spots, especially when the tissue is not severely injured. Cryoapplication can be used both at the time of bleeding and after it stops. After local anesthesia (sometimes anesthesia is not performed), the bleeding area is touched or a "halo" is drawn around the bleeding area to exclude the effect of cold on the surrounding tissues of the nasal septum and other adjacent unchanged tissues, a special shield made of fluoroplastic can be used (ϕ-4), put on a needle. In addition, the branches of the nasal mirror also protect the wings of the nose and other tissues from the effects of cold. Snow carbonic acid (-79 C) can be used as a refrigerant. Cryoapplication with this acid is carried out with the help of an oval spoon (size of the working part - 4x4 mm), made of polymer material. It is filled with a lump of "snow" and applied to the bleeding area. Exposure to cold can be carried out by a one- or two-cycle method. The exposure of freezing with a cryoachiicator is 30-120 s, with a cryoprobe and snow carbonic acid - from 15 to 30 s. In some cases, after the bleeding area has been frozen, without waiting for its thawing, it is advisable to perform nasal tamponade. The need for such a combined method of stopping bleeding may be due to the impossibility of obtaining a direct hemostatic effect from the action of low temperature in some patients. Local freezing reduces painful sensitivity to tamponade and creates conditions for stopping bleeding in those patients in whom it was not possible to achieve a therapeutic effect with tamponade or other means. It is important to emphasize that liquid nitrogen does not cause those reactive tissue changes observed after exposure to them with electrocautery (galvano-cautery) or other caustic agents. The method of local freezing to stop nosebleeds is particularly promising and effective in hemorrhagic diatheses in children (Randyu-Osler's disease, hemophilia, Verlhoff's disease, etc.). Recently, local influence has been used in combination with optical means, since the bleeding places are very small and it is difficult to find them with the naked eye; it is even more difficult to manipulate in these areas. When using an operating microscope, we have bright, deeply penetrating illumination without chiaroscuro, binocular vision and stereoscopic imaging. In case of significant bleeding, we perform anterior or posterior tamponade. It is important to emphasize that nasal tamponade, as well as any nasal blockage, especially if it is prolonged or repeated, has a rather harmful

effect on the patient's body. Previously, for the purpose of analgesia, the mucous membrane is lubricated 2-3 times with a 2% dicain solution. Anterior tamponade of the nose is performed with the help of a long (60-70 cm) narrow turunda, elbow forceps or hemostatic paste. The turunda is impregnated with a hemostatic composition and squeezed slightly, pulling tweezers between the compressed branches. Tamponing is done by orderly laying the turunda on the bottom of the nose from its entrance to the choana. With bent tweezers or Hartmann's nasal forceps, the turunda is grasped, retreated 6-7 cm from its end, and is inserted along the bottom of the nose to the choana, the tweezers are removed from the nose and inserted again without the turunda in order to hug the already placed loop of the turunda to the bottom nose, then a new loop of turunda is introduced, etc. If necessary, the upper parts of the nose are tamponed by consecutively filling the cavity with turunda without looping. In some cases, when after tamponade of one half of the nose, bleeding continues from the other, it is necessary to tamponade both halves of the nose. When inserting a tampon, be careful not to injure the mucous membrane. The front tampon is removed 1-2 days after its previous impregnation with a solution of hydrogen peroxide. In the case of nasal tamponade, the voice changes and speech is disturbed: hoarseness and monotony appear. The patient becomes more difficult to eat, the food is swallowed insufficiently chewed. The smell of food is not noticeable, so the patient's appetite decreases. Tinnitus, a feeling of heaviness in the head, headache may occur. In view of the above, the tampon should be left in the nose for a maximum of two days, after which it should be slowly removed, softening it with petroleum jelly, peach or apricot oil. Prolonged or repeated tamponade of the nose can cause not only the above-mentioned phenomena, but also other complications: disease of the throat, angina. A few hours after the tamponade, an unpleasant rotten smell appears. In view of the above, you can use a pneumatic tampon with a tube passing through the middle of this tampon, which provides the patient with the necessary nasal breathing and prevents possible complications. A rubber tampon is inserted into the nasal cavity, then air is pumped into it, as a result of which it presses on the mucous membrane of the nose and the bleeding stops. The advantage of this method is obvious: the tampon tightly adheres to the bleeding places, its removal occurs without damage to blood clots and secondary bleeding. It is important to note that this method is convenient in any conditions - both in a hospital and in a polyclinic.

For posterior tamponade, special tampons are prepared in advance and sterilized: the gauze is folded in several layers so that the tampon comes out in the form of a bale measuring approximately 3x2.5x2 cm, it is tied crosswise with two long (20 cm) silk threads, one thread after Bandages are cut off, and three are left. Posterior tamponade is started by inserting a thin rubber catheter into the bleeding half of the nose, and it is carried out until the end exits through the nasopharynx into the middle part of the pharynx. Here, the catheter is grasped with forceps or tweezers and brought out through the oral cavity. Two threads of a tampon are tied to the end of the catheter brought out through the mouth, and the catheter is pulled up by the nasal end together with the threads tied to it, taking the tampon through the mouth into the nasopharynx. At the same time, it is necessary to use the index finger of the right hand (to the right of the big one, pass the tampon over the soft palate and hug it tightly in the corresponding choana). The two threads brought out through the nose are pulled tight, then this half of the nose is tamponed with turunda, and at the entrance to it, the threads are tied over a gauze pad. The end of the thread left in the mouth is intended for tampon removal; it is strengthened with an adhesive plaster on the cheek. However, the thread in the mouth interferes with the patient and it is better to cut it a little below the level of the soft palate. In this case, the tampon is removed with the help of forceps or Kocher's clamp, which captures the tampon thread. The posterior tampon is removed from the nasopharynx after 2 days, but if bleeding resumes after removal of the tampon, then after repeated posterior tamponade, it is left for 3-4, and sometimes for 7-8 days, impregnating with antiseptic solutions in the above-mentioned manner. It should be taken into account that with posterior tamponade, drainage from the auditory tube on the side where the tampon is located is disturbed, and in the presence of putrefactive microflora, which appears already in the first days after tamponade, acute inflammation of the auditory tube and tympanic cavity may occur. Therefore, after posterior tamponade of the nose, it is advisable to immediately prescribe antibacterial drugs in the usual dosage. Nasal tamponade, performed without an examination and not by an otorhinolaryngologist, causes additional trauma to the mucous membrane, especially in those cases when the tampon was not previously moistened with sterile vaseline oil, emulsion or any other emollient. Such a tampon is

removed from the nose with great force, which is accompanied by pain. A tampon can be moistened with a 3% solution of hydrogen peroxide, a 5% solution of antipyrine, plasma, blood serum, thrombin, Vasiliev paste. A tampon with a hemostatic sponge works well. In some cases, for the purpose of pain relief when removing a tampon, it is worth using the drug sombrevin, recommended for short-term anesthesia. In severe cases of epistaxis, general measures are taken, their purpose is to increase blood coagulation and narrow peripheral vessels. Great importance is attached to anti-coagulant agents acting on the blood system. It is advisable to use a 10% solution of calcium chloride, vitamin D (Vikasol 0.015 g), rutin, corticosteroids, or make a blood transfusion (50-80 mol). Oxygen therapy can be used to stop nosebleeds. If you give oxygen from an oxygen pillow to a patient with calm and steady breathing, the bleeding stops quickly enough. Obviously, such a measure prevents or eliminates blood stagnation, has a calming effect. In order to stop bleeding, you can also use a 0.5% solution of novocaine, injected under the mucous membrane in the area of bleeding. Novocaine solution compresses blood vessels in this area, which leads to the cessation of bleeding. For the same purpose, it is recommended to use a local 5% solution of quinine, which is also injected into the area of bleeding, if it is detected. When prescribing adrenaline (0.1% solution), it is important to remember that its action is short-lived; after the initial effect - the narrowing of blood vessels - their expansion and increased bleeding, sometimes more abundant than it was before providing assistance, follows. It is better not to instill any drops, even indifferent ones, into the nose, because they can contribute to the appearance of vomiting and swallowing movements, which are clearly undesirable in this case, as well as the formation of blood clots. In addition, instillation of drops into the nose during epistaxis is dangerous in that the contents of the nasal cavity together with the medicinal liquid penetrate into the auditory tubes and can contribute to the development of otitis media. Instilling drops into the nose, as well as other manipulations in the nasal cavity (inserting a tampon, removing clots), can cause sneezing. To remove the sneeze reflex, there is the following technique: pressure in the corner between the upper lip and the nose. At the same time, the sneeze reflex is eliminated by a stronger painful sensation in the area of pressure. It is very valuable and expedient to introduce catgut into the nose when the site of bleeding cannot be determined. To hold the catgut threads, a lump of sterile cotton wool is inserted into the nasal cavity. This method has proven effective in cases where other methods have failed. It is also important that when the nasal cavities are filled with catgut, the nose is not completely excluded from breathing. In addition, catgut threads themselves are a gentle material and do not injure the mucous membrane like a gauze tampon. If it is not possible to stop the nosebleed by the listed measures, it is worth resorting to ligation of the blood vessels passing through them. The external carotid artery (one or both), the internal maxillary artery and other vessels are subject to ligation. An operating microscope can be used for ligation of the intramaxillary artery, which improves the visibility and illumination of the operating field. Sometimes it is necessary to tie the vessels from the side of the hard palate in the area of the incisal opening. With this technique, it is possible to stop pulsating bleeding in the nose. If after ligation of a blood vessel on one side the bleeding does not stop, then it is necessary to make a ligation on the other side. In some cases, only such a measure of help can prevent a fatal outcome. If the bleeding does not stop after ligation of both external carotid arteries, it is necessary to perform an ethmoidotomy by endonasal or external access with subsequent tamponade of the nasal cavity.

Work performance methodology, performance stages.

A list of educational practical tasks that must be completed during the practical session.

- master the methods of nose research;
- perform anterior and posterior rhinoscopy;
- determine the cause and place of nosebleed;
- "read" radiographs of the bones of the nose and the nasal cavities;
- extinguish the bleeding vessel of the nasal septum with silver preparations;
- perform front and back tamponade of the nose;
- apply a sling-shaped bandage;
- prescribe adequate hemostatic therapy.

Tests and tasks to control the final level of knowledge:

A. Questions for self-control:
1. Name the endogenous etiological factors of nosebleeds.
2. Name the exogenous etiological factors of nosebleeds.
3. What are the anatomical features of the structure of the nasal mucosa.
4. Blood supply of the nasal cavity and external nose.
5. Why bleeding from lattice arteries is especially dangerous.
6. Local conservative methods.
7. Anterior and posterior tamponade of the nasal cavity.
8. Surgical methods of stopping nosebleeds:
A) technique of ligation of the external carotid artery
B) technique of ligation of the internal carotid artery.
C) ethmoidotomy by endonasal and external methods.
9. General therapeutic actions to stop nosebleeds: A) lowering blood pressure B) administering to the patient drugs that increase thrombus formation

B. Tasks for self-control:
1. After the patient fell, a fracture of the nasal bones was detected, on the X-ray there was a total darkening of the maxillary sinus. I didn't suffer from the undead before. What is the presumptive diagnosis?
2. The boxer received an injury to his nose. The next day, anterior rhinoscopy revealed swelling in the area of the nasal septum on both sides, which impedes breathing. What is the diagnosis?
3. An 18-year-old patient sought a consultation regarding recurrent nosebleeds that often occur in the premenstrual period. What is the possible diagnosis?
4. A patient was brought to the reception room after a car injury. Immediately after it, there was a nosebleed, which was absent at the time of the examination. A serous-bloody fluid is released from the nose. Pronounced "glasses" symptom. Consciousness is confused. What is the possible diagnosis?
5. The patient is concerned about the complication of nasal breathing, which arose after a nose injury 5 years ago, an almost constant runny nose. During anterior rhinoscopy, congestive swelling of the lower turbinates is determined, on the nasal septum to the left - a diagonal ridge that touches the turbinates. What is the treatment strategy?
6. The patient developed subcutaneous emphysema of the face after a nose injury. What can this indicate?
Answers to the problems:
1. Hemosinus.
2. Hematoma of the nasal septum.
3. Vicarious bleeding.
4. Fracture of the base of the skull, hemorrhage in the orbital tissue, nasal discharge.
5. Operation submucosal resection of the nasal septum
6. About the fracture of the bones of the lattice labyrinth (pathognomonic symptom)

C. Tests for self-control
1. What surgical interventions should be used to stop nasal bleeding from the back of the nasal cavity?
A. Submucosal septotomy
V. Conchotomy
S. Ethmoidotomy
D. Hymorotomy
E. None of the above
2. What changes in the mucous membrane lead to chronic recurrent nosebleeds?
A. Rhinoliths appear
B. ulcers appear, which lead to local atrophy
S. foreign body
D. nose injury
E. chronic rhinitis
3. What are the common causes of nosebleeds, except?

A. Hypertensive disease
B. Atherosclerosis
S. Vegeto-vascular dystonia
D. Diseases of the blood
E. Kidney disease
4. What are the main principles of nosebleed treatment, excluding?
A. Local stoppage of bleeding
B. Treatment of diseases that cause nosebleeds
C. Prevention of complications
D. Hemostatic therapy
E. Applying a plaster cast
5. A 68-year-old patient with a nosebleed, suffering from hypertension, was transported by ambulance. The emergency doctor could not stop the nosebleed. What urgent measures should be taken?
A. Hemostatic therapy
B. Hypotensive therapy, local hemostatic therapy, vessel ligation, anterior nasal tamponade
S. Urgent ethmoidotomy
D. Frontal therapy
E. Anterior-posterior tamponade
6. What hemostatic therapy is prescribed for nosebleeds?
A. Vikasol, aminocaproic acid, calcium glucanate, dizinon
B. Ascorbic acid
S. Calcium gluconate
D. Diphenhydramine, calcium gluconate
E. Ceftrioxone
7. Physical methods of stopping nosebleeds
A. Galvanocaustics
B. Ultrasonic applicator
S. Cryoapplicator
D. Carbon dioxide laser
E. All of the above
8. What vessels are ligated for long-term nonstop nosebleeds?
A. Internal superior maxillary artery
B. External carotid artery
S. Ethmoidal artery
D. Common carotid artery
E. Internal carotid artery
9. What materials can be used to stop nosebleeds?
A. Gauze turunds
B. Hemostatic sponge
C. A sponge soaked in an antibiotic
D. A soft rubber bag with subsequent filling with air
E. All of the above
10. What is necessary to perform posterior nasal tamponade
A. Rubber catheter
V. Bayonet tweezers
S. Nosovoy karntsang (clamp)
D. Gauze tampon 2x3 cm
E. All of the above
11. What should be prescribed to a patient with posterior nasal tamponade?
A. Antibiotics, hemostatic agents, painkillers
B. Hemostatic agents
S. Hormones
D. Promedol
E. Diphenhydramine

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Practical lesson No. 17

Topic: "Foreign bodies of ENT organs. Esophageal burns".

Purpose: to acquaint students with the options for the location of foreign bodies in the ENT organs, the section of bronchoesophagology, primarily with diseases that lead to stenosis of the respiratory tract and esophagus. To acquaint students with the contribution of domestic scientists regarding clinical problems associated with stenosis of various areas of the tracheobronchial tree.

the student should know:

1) ways of penetration of foreign bodies into the respiratory tract and lumen of the esophagus;
2) clinic and diagnosis of foreign bodies of the larynx;
3) diagnosis and clinical signs of foreign bodies of the larynx;
4) clinic of bronchial foreign bodies, depending on the type of its obturation;
5) clinical and X-ray symptoms of esophageal foreign bodies;
6) clinic, diagnosis of foreign bodies of the ear and nose;
7) therapeutic measures for foreign bodies of the ENT organs;
8) additional methods of research of the respiratory tract and esophagus, necessary for confirmation of their obstruction by foreign bodies;
9) causes of esophageal burns;
10) factors depending on the degree of damage to the esophagus with chemical agents burns;
11) clinical manifestations of esophageal burns /3 stages/

be able:

1) conduct a targeted examination of patients with suspected respiratory obstruction a foreign body in the tract or esophagus;
2) to determine on the basis of anamnesis, clinic and X-ray examination data the presence of foreign bodies in the respiratory tract and esophagus;
3) to determine the clinical manifestations of foreign body complications of the respiratory tract and esophagus /stenosis, esophagitis, mediastinitis, perforation of the esophagus/, indications for emergency intervention;
4) "read" radiographs of patients with foreign bodies in the esophagus and bronchi;
5) perform removal of a foreign body of the external ear;
6) provide emergency assistance to patients in the first hours after a burn of the esophagus;
7) to prescribe the volume of treatment measures for the entire period of burn diseases esophagus;
8) use the acquired knowledge in solving situational problems during the final control on this topic.

Basic concepts: the problem of foreign bodies of the respiratory tract and esophagus is relevant for doctors of any specialty - otolaryngologists, pediatricians, therapists. Timely diagnosis and removal of foreign bodies from the respiratory tract and esophagus significantly reduces the number of pulmonary and mediastinal complications and the mortality associated with them, that is, determines the end of the disease. In this regard, I would like to quote the figurative expression of M.S. Mikhelovich that "unrecognized foreign bodies in the upper respiratory tract are almost certain death of a child. "Patients with a suspicion of a foreign body, as a rule, first of all seek medical help to general practitioners. Unfortunately, in practice, we encounter a situation when district doctors underestimate the data of anamnesis, foreign body clinics and adhere to wait-and-see tactics: sometimes they treat other diseases, such as pneumonia, whooping cough, asthmatic bronchitis, chronic laryngitis, and others.

From the above, it is obvious that there is a need to popularize evidence about foreign bodies of the ENT organs among a wide range of doctors.

Regarding chemical burns of the esophagus, you should draw your attention to the fact that it is: 1) a severe type of injury, which gives a high percentage of mortality due to the occurrence of various complications;

2) an unfavorable outcome of the disease can be noted both in the first days after poisoning and during the treatment of a chemical burn of the esophagus;

3) at the same time, it is necessary to understand that the variety of manifestations of the pathological process and the complex of therapeutic agents that the patient needs require his referral to an inpatient

department (surgical, resuscitation, otorhinolaryngology) immediately after poisoning with chemical substances.

Thus, early diagnosis and provision of emergency medical care to patients with the specified pathology are issues that must be resolved by a doctor of any specialty.

Equipment: tables, dummies, simulators, multimedia presentations, video films, tool sets, tuning forks, tomograms, radiographs, etc.

Plan

№№	The name of the composition of the class	Hour
I.	Organizational moment (greetings, checking those present, announcing the topic, the purpose of the lesson, motivating students to study the topic).	7
II.	Control of supporting topics.	38
2.1	Requirements for students' theoretical readiness to perform practical classes (knowledge requirements, list of didactic units).	8
2.2	Questions (test tasks, problems, clinical situations) to check basic knowledge on the subject of the lesson.	30
III.	Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.).	40
3.1	Content of tasks (tasks, clinical situations, etc.).	20
3.2	Recommendations (instructions) for performing tasks (professional algorithms, orienting maps for the formation of practical skills and abilities, etc.).	3
3.3	Requirements for work results, including to registration	2
3.4	Control materials for the final stage of the lesson: problems, tasks, tests, etc. (if necessary).	15
IV.	Summing up.	5

Tasks for checking the advanced level of knowledge-skills on the subject of the lesson:

1. A 13-year-old girl was admitted to the clinic with complaints of a periodic cough. From the anamnesis, it was found that a week ago, she choked while eating. A strong cough immediately appeared, a sharp short-term difficulty in breathing. Then the breathing was restored, the cough decreased, malaise appeared. During the examination, no pathology on the part of the ENT organs was detected. Atelectasis of the lower lobe of the right lung was determined X-ray. What is the diagnosis?
A. Foreign body of the left bronchus.
B. Foreign body of the right lower lobe bronchus.
S. Foreign body of the trachea.
D. Foreign body of the larynx.
E. Foreign body of the right bronchus.
2. Morphological changes in third-degree esophageal burns:
A. Lesions of the surface epithelial layer.
B. Damage to the entire thickness of the mucous membrane.
C. Necrosis of the mucous and muscular layers of the esophagus.
D. Transition of inflammatory changes to deep-seated formations (periesophageal tissue of the mediastinum).
E. All of the above
3. A six-year-old girl was brought by her parents to the ENT clinic with attacks of coughing and suffocation, which appeared after she put a button in her mouth an hour ago and choked on it. Objectively: The skin is pale, moist. During a coughing attack, difficulty breathing appears, while the skin and mucous membranes acquire a bluish tint. The change in the oral cavity and pharynx is not determined. The mucous membrane of the larynx is moderately hypericized, infiltrated. The vocal

folds are slightly hypertrophied, thickened. The vocal fold is wide enough. Mucus is in the connective space. Deeper sections are not visible. What is the expected diagnosis?
A. Foreign body of the trachea.
V. Foreign body of the larynx.
S. Foreign body of the right bronchus.
D. Foreign body of the left bronchus.
E. Foreign body of esophagus
4. How many degrees of esophageal burns are distinguished?
A. Three degrees.
B. Four degrees.
S. Five degrees
D. One degree.
E. Two degrees
5. A student turned to the doctor with complaints of unbearable noise and pain in the right ear, which he associated with an insect bite. What should be done first?
A. Kill the insect by burying it in an oil or alcohol solution
B. Kill the insect by burying it in water
C. To prevent the development of inflammation by burying an antibiotic
D. Rinse the ear canal.
E. Remove the foreign body with a hook
6. Pathological-anatomical stage of esophageal burn, during which the maximum development of connective tissue occurs.
A. Stage of necrosis (I stage).
B. II stage (ulcers).
C. III stage (granulation).
D. IV stage (scarring).
E. III-IV stages.
7. A 7-year-old girl, while playing with beads, stuck one of them into the ear canal. Another med. the sister, to whom the parents turned, tried to remove the foreign body with tweezers. However, the attempt turned out to be unsuccessful - the bead went deep into the ear canal. The girl was taken to the ENT department. What are the doctor's next tactics?
A. Surgical removal of a foreign body.
B. Removal of a foreign body with a hook.
C. Removal of a foreign body with tweezers.
D. Removal by washing.
E. Removal by suction
8. Which of these factors has the least effect on the degree of esophageal burns?
A. Poison concentration.
B. The amount of poison.
C. Duration of action on the fabric.
D. The condition of the patient at the time of poisoning.
E. Nature of damage (acid, alkali).

Formation of professional skills and abilities.
Organization of self-training.
16. Familiarize yourself with the purpose of self-training.
17. When working with the book and lecture notes, consistently study the main sections of the topic indicated in the indicative self-training map.
18. Expand and systematize knowledge by studying the information provided in methodological development.
19. Conduct self-monitoring of acquired knowledge using tests. Only after solving them independently, look at the benchmarks at the end of methodological developments.
20. Solve homework and UDRS tasks (give the homework to the teacher at the beginning of the class.

Lesson content.

The clinic of foreign bodies of the larynx is characterized by the following phenomena:
a) stenosis, which is primary (i.e. caused by the closure of the glottis lumen by a large foreign body) and secondary (in cases where the foreign body, due to its shape and size, does not cause stenosis directly at the time of aspiration; however, stenosis develops quickly, acutely in the near future, due to swelling of the mucous membrane);
b) coughing fits
c) disorder of voice function; hoarseness is persistent, appears immediately after foreign body aspiration;
d) with sharp foreign bodies, pain when swallowing and head movements

It should be remembered that with foreign bodies in the larynx, the patient is always at risk of asphyxia.

Diagnosis is not difficult, it is based on examination of the larynx: in children - with direct laryngoscopy, in adults - as a rule, with indirect laryngoscopy.

Foreign bodies of the trachea cause:
a) paroxysmal "whooping cough" cough;
b) breathing disorder, however, less pronounced than with foreign bodies larynx;
c) election of a foreign body in the trachea, which manifests itself as a symptom of "clacking". These blows of a foreign body against the subfold space and the bifurcation of the trachea are well heard during auscultation and are more clearly felt with the fingers of the hands placed on the larynx;
d) in some cases, pinching between the vocal folds (stenosis).
Removal of tracheal foreign bodies in children is performed by direct laryngoscopy or bronchoscopy. Sometimes, with these methods, it is not possible to "pass" a foreign body through the glottis (cases of aspiration of organic foreign bodies prone to swelling and increasing their size). Tracheotomy is indicated.

Clinic of bronchial foreign bodies. There are 3 types of bronchostenosis:
Partial blockage of a bronchus: after an acute attack of stenosis during the passage of a foreign body, a partial obstruction of the lumen of one of the bronchi occurs. At the same time, air passes into the lungs, but there is a more slow filling of the lungs with air during inhalation and exhalation becomes difficult. The patient does not have severe respiratory failure; such foreign bodies reveal great complications for diagnosis and are interpreted in most cases as other lung diseases. At the same time, the long stay of a foreign body in the bronchus contributes to the development of inflammatory changes in the bronchi and lungs, which in turn leads to even greater diagnostic errors.
Therefore, in case of foreign bodies with partial obturation of the bronchus, it is necessary to study the history and clinical and radiological data very well.
There are no characteristic subjective symptoms. During the external examination of the patient, a slowing of the excursion of one half of the chest is noted. During physical examination - shortening of the percussion sound, weakened breathing. The X-ray symptom of Holtzknsht - Jacobson is of great diagnostic value: displacement of the mediastinal organs towards the obstructed bronchus at the height of inhalation is noted. During exhalation, the heart takes a normal position, that is, the organs of the mediastinum during forced breathing perform "oscillating" movements. Shadows of both lungs of unequal intensity, lagging of the dome of the diaphragm on the side of the obstructed bronchus are also present.
With complete obturation of the bronchus (main or lobe), the initial front is clearly expressed, since on the way to the bronchus, the foreign body injures both the larynx and the bifurcation of the trachea. After stopping the initial reaction, the symptoms develop in the following directions:
- rapid emergence from the act of breathing, the whole lung or its fate, important valve-circulatory disorders develop. Blood and lymph circulation are disrupted, the overflowing part of the lung captures a large amount of blood. Atelectatic lung is "a bloody swamp";

- the importance of shortness of breath increases even more when it is embodied in the inflammatory process of the mucous membrane of the bronchus and lungs;
- the function of a healthy lung is weakened due to its emphysematous expansion
- moderately, in addition to respiratory, cardiovascular insufficiency develops.

The general condition of such patients is extremely difficult. Physical data - dullness of the percussion sound, auscultation sharply weakened breathing or is not heard. Exclusion of the corresponding half of the lung from the act of breathing.
During X-ray examination - intense darkening of the lung tissue with clear contours (atelectasis), displacement of mediastinal organs to the affected side, immobility of the dome of the diaphragm.
With long-term obturation, deep obstructive changes develop in the lungs, which require the removal of large parts of the lung.
Only timely diagnosis of a foreign body, which allows early removal of them by protective endoscopic methods (bronchoscopy), is the prevention of the development of severe, sometimes fatal complications from the lungs.
Esophageal burns.
Most often, there are chemical burns of the esophagus with caustic substances: acids and alkalis. In recent years, burns of the esophagus are most often caused by acetic essence, less often by strong acids / sulfuric, hydrochloric, nitric, carbolic, etc. / Burns with alkalis are caused by caustic soda / caustic soda, caustic potassium and ammonia. Thermal burns are much less common when hot liquids or fire flames enter the esophagus, caustic substances are accidentally drunk / by small children or adults / instead of water, vodka, kvass, etc. For the purpose of suicide, they drink a large amount of caustic substance.
Acids that affect tissue proteins turn them into insoluble acid albuminates. Coagulation necrosis occurs with the formation of a dry scab, which does not allow the acid to penetrate deep into the tissues.
Under the action of alkali, the cell protein swells with further liquefaction and alkaline albuminates dissolved in water are formed. The lye penetrates deep into the tissues and forms wet or, as it is called, colliquation necrosis. This explains the deeper damage to tissues under the action of alkalis.
The caustic substance has a double effect on the wall of the esophagus. The first time - when swallowing and especially in places of physiological constrictions, where it is delayed. Secondarily, the wall of the esophagus is exposed to the action of a chemical agent during vomiting that causes irritation of the mucous membrane of the stomach. Under the influence of caustic substances, severe patho-anatomical changes are observed in the tissues of the esophagus, which are divided into 4 stages.
The first stage is the stage of necrosis, which lasts 1-2 weeks. After the rejection of necrotic masses, the second stage begins - the stage of ulcers and granulations, the duration of which is several weeks. Ulcers are covered with juicy granulations. They are compacted; the newly formed loose connective tissue shrinks, becomes scarred, tightens the walls of the esophagus, reduces its lumen. This is how the 3rd stage - the stage of scarring - develops slowly. The fourth stage - the formation of stenoses - the stage of stenosis. Narrowing can be lumbar and longitudinal. The first of them occupy no more than 2-3 cm along the length of the esophagus, the longitudinal ones - much longer. If the entire wall of the esophagus is affected, it may be welded to the adjacent organs. The duration of the III and IV stages is from 2 months to several years.
With the formation of cicatricial narrowing, the muscles above the part of the esophagus hypertrophy. Over time, their insufficiency occurs. This part of the esophagus expands, a diverticulum develops. Here, the food stagnates and decomposes, which supports the inflammatory process and can lead to new scarring.

Clinical picture. The clinic distinguishes 3 periods of this disease
and/acute period
b/latent or feigned well-being
in/ the period of esophageal stenosis
After taking a caustic substance, the patient has a sharp pain in the throat, along the esophagus and in the stomach, which can lead to loss of consciousness. There is vomiting with a mixture of blood. Already in the first hours, the patient develops symptoms of intoxication, which are initially associated

with the resorptive effect of the caustic substance, and then they deepen due to the absorption of the products of decay of the affected tissues. The body temperature rises and can reach 39-400C. During an objective examination, hyperemia, edema, or necrotic plaque appear on the mucous membrane of the mouth, pharynx, esophagus, and salivation is noted.
In the blood in the acute stage, there is leukocytosis, partial disintegration of erythrocytes, acceleration of ESR, C-reactive protein appears, DFA indicator increases. All these indicators provide an opportunity to judge the severity of the esophageal burn and the effectiveness of anti-inflammatory therapy.
Diagnostic esophagoscopy is performed on day 5-12, when the patient's condition improves.
A first-degree burn is diagnosed when hyperemia and swelling of the mucous membrane of the esophagus is determined by an esophagoscope, and the patient's condition is generally satisfactory.
With a second degree burn, ulcers appear that merge or do not merge with each other, or necrotic plaques on the mucous membrane of the esophagus. The patient's condition is of medium severity, intoxication symptoms are mildly expressed.
Stage III is characterized by the presence of fused necrotic plaques on the mucous membrane, while the phenomena of intoxication are sharply expressed.
The general condition of the patient is serious. Intoxication was sometimes so significant and local lesions so inflammatory that patients died within hours or days after poisoning.
If intoxication and damage to the esophagus are less pronounced, then on the 6-10th day the patient's condition improves, he began to take liquid or even coarse food and the latent period begins. During this period, patients feel well and insist on being discharged from the department. This period coincides with the pathological stage of ulcers and granulations.
Slowly, the period of feigned well-being passes into the period of esophageal stenosis, which coincides with the III and II stages of pathological changes. The patient has difficulty in passing first a whole, and then a porridge-like meal. The patient is forced to swallow food for a long time and drink water. Difficulty in the passage of food through the esophagus is permanent and progressive, but is not accompanied by sharp pain, as in the first period. The patient belches and vomits after eating, slowly esophageal obstruction may develop.
One of the means of emergency aid for burns of the esophagus is the removal and neutralization of the caustic substance /carried out in the first four hours after the burn/; wash the esophagus and stomach with the help of a thick gastric probe. Wash the stomach with a large amount of water (up to 10 liters).
In case of acetic acid poisoning, washing is carried out until the smell disappears.
In case of alkali poisoning (caustic soda, caustic soda), the stomach is washed with a 0.5% table vinegar solution or a 1% citric acid solution; in case of poisoning with acids (sulphuric, saline), the stomach should be washed only with water, since when using alkaline solutions, a large amount of carbon dioxide may be released.
In conscientious cases, the stomach is washed with buffer solutions or milk.
Before inserting the probe, prescribe a large amount of liquid for drinking, which is indicated in a specific case /milk, weak solutions of acetic, hydrochloric or citric acid/. Other measures of emergency care and medical measures for the entire period of the disease must be studied in accordance with what is indicated in the orientation map.

Work performance methodology, performance stages.
A list of educational practical tasks that must be completed during the practical session.
1. Curation of a thematic patient with the fulfillment of specific educational goals of the lesson;
2. Master the technique of removing a foreign body from the external auditory canal.
Work performance methodology, work stages
SCHEMA OOD "Examination of a patient with suspicion of a foreign body in the respiratory tract and esophagus".
1. Targeted collection of complaints and anamnestic data (signs of aspiration or ingestion of a foreign body);
2. Conduct research on respiratory function, determine:

a) number of respiratory movements, depth of breathing, duration of inhalation, exhalation and respiratory pauses;
b) uniformity of excursions of the right and left half of the chest, larynx;
c) participation in breathing of auxiliary muscles (retraction of intercostal spaces, supraclavicular, supraclavicular pits, "fluttering" movement of the wings of the nose);
d) sonority of breathing (silent, stridorous, asthmatic, whistling);
e) presence of shortness of breath and its form (inspiratory, expiratory);
3. Assess the patient's behavior (anxiety, motor excitement, fear);
4. Pay attention to the color of the skin and visible mucous membranes (cyanosis, pallor, acrocyanosis);
5. In the presence of stenosis, it is necessary to determine its stage (compensated, incomplete compensation, decompensation, terminal);
6. Physical data
7. The presence of signs of a foreign body running (the "clap" symptom);
8. Define voice function disorder and its term;
9. State of the ENT organs during indirect laryngoscopy (swelling of the mucous membrane, its color, the presence of a foreign body, etc.);
10. Pay attention to the patient's posture (forced position)
11. Determine the state of the soft tissues of the neck (local pain, the presence of infiltrates, subcutaneous emphysema);
12. Evaluate the data of the X-ray examination (foreign body shadow, lateral displacement mediastinum, detection of atelectasis, pulmonary emphysema, Holtzknecht's symptom Jacobson, uneven excursion of the diaphragm);
13. Evaluate the data of general clinical laboratory research.

Tests and tasks to control the final level of knowledge.

A. QUESTIONS FOR SELF-CONTROL

1. Methods of diagnosing foreign bodies of the nose.
2. Methods of removing foreign bodies from the nose.
3. At what age are foreign bodies of the upper respiratory tract most common?
4. Name the methods of diagnosing foreign bodies of the respiratory tract.
5. Is it possible to diagnose a foreign body of the respiratory tract only based on the anamnesis?
6. Define the type of stenosis of the larynx with a large foreign body.
7. How dangerous are foreign bodies of the respiratory tract of an organic nature?
8. Name the method of removing a foreign body of the larynx in an adult.
9. The most characteristic clinical symptom of a running foreign body?
10. Name the clinical symptoms of complete obstruction of the bronchus by a foreign body
11. X-ray data in case of complete, partial and valve blockage of the bronchus.
12. What explains the most frequent localization of foreign bodies in the right bronchus?
13. Predictive reasons for "ingesting" foreign bodies.
14. Subjective complaints of patients with foreign bodies in the esophagus.
15. Methods of treatment of uncomplicated foreign bodies of the esophagus.
16. Does delaying the removal of foreign bodies lead to complications?
17. What are the observed complications of foreign bodies of the esophagus?
18. The most reliable symptoms of perforation of the esophagus?
19. Method of treatment of complicated foreign bodies.
20. Measures to prevent aspiration of foreign bodies.
21. The nature of the damaging effect of alkalis on the walls of the esophagus.
22. The nature of the damaging effect of acids on the walls of the esophagus.
23. Describe the local changes of the mucous membrane in the case of first-degree burns of the esophagus.
24. What is characteristic of the second degree of esophageal burns.
25. Give a description of III degree burns of the esophagus.
26. What substances cause deeper damage to the esophagus wall.

27. Describe the pathomorphological changes in esophageal burns.
28. What neutralizing substances are used for poisoning with alkalis and acids.
29. Emergency aid for esophageal burns.
30. Treatment tactics for esophageal stenoses.
31. Complications of chemical burns of the esophagus.

V. TASKS OF SELF-CONTROL

Task #1. A 1.5-year-old child was brought to the Central Hospital, who, based on the anamnesis (bitten a nut, coughed sharply, turned blue) and objective data (paroxysmal cough, stridorous breathing during exercise, crying, symptom of foreign body expulsion), was diagnosed as: foreign body trachea The child was sent to a special medical institution, where she was brought on the 2nd day after the onset of the disease. On admission: the child is lethargic, apathetic, pale, shortness of breath is pronounced, the mucous membranes are cyanotic, and coughs periodically. Physical data: on the right - shortening of the percussive sound of breathing is vesicular, weakened. Lagging of the right half of the chest during breathing. On the X-ray, there is a displacement of the mediastinal organs to the right, intense homogeneous darkening of the right lung with clear contours. The right dome of the diaphragm is immobile.
1. Make a clinical diagnosis
2. Name the reason for the changed clinical picture
a) bronchus rupture
b) foreign body migration
c) edema of the mucous membrane of the tracheobronchial tree
d) foreign body of the trachea
e) bronchopneumonia

Task #2. In the reception department of the Central Hospital, the nurse gave the child a calcium gluconate tablet. The child cried and aspirated the tablet, which caused asphyxiation. The doctor on duty performed an emergency tracheotomy.
1. What tools are needed to perform a tracheotomy?
2. Describe the upper tracheotomy technique.
3. Name what types of tracheotomy you know and what is their difference.

Task #3. The patient, 60 years old, ate meat borscht, choked and felt pain in the upper part of the esophagus. She swallowed dry roots because the pain did not go away. She sought medical help. During hypopharyngoscopy, no foreign body was found. The patient wears a removable prosthesis.
1. Name the reasons that contribute to the entry of a foreign body into the esophagus
2. What additional research methods do you prescribe for the diagnosis of a foreign body?
3. When confirming a foreign body - prescribe treatment, which one?

Problem 4. A 3-year-old child was brought to the ENT department. According to the parents, an hour ago, while playing with small objects, grains, the child coughed, then "turned blue", after a few minutes her condition normalized, her breathing leveled off.
What localization of a foreign body can be thought of in this patient?
Task 5. A 65-year-old patient came to the polyclinic with complaints of neck pain. In the anamnesis - felt pain while eating, tried to eat a crust of bread, but in vain; no foreign body was found during examination of the larynx. What additional methods of examination must be performed on the patient to rule out a foreign body in the esophagus? Why are foreign bodies of the esophagus especially common in the elderly?

Problem 6. A 23-year-old patient was brought to the ENT clinic half an hour after she drank about 100 ml of vinegar essence. The condition is severe, pronounced inspiratory shortness of breath /36 respiratory movements per minute/, the skin is pale; blood pressure 100/60 mmHg. st., pulse 96 beats. in a minute. Auscultation - dry and moist rales in the lungs.

In which department should the patient be hospitalized?
What neutralizing agent should be used for gastric lavage?

Standards of answers to the task
Task I.
Foreign body of the right bronchus
b/migration of a foreign body

Task 2.
I. The following tools are recommended for tracheotomy: a scalpel, two pairs of sharp three-toothed hooks, two pairs of blunt hooks, a two- or three-lobed Trousseau dilator for the trachea, a sharp single-toothed hook, a Kocher probe, 8-10 clamps for vessels, 3-4 anatomical and surgical tweezers, a needle holder and cutting 2-3 needles of different sizes, a 5-10 gram syringe for anesthesia. In each hospital, in the otorhinolaryngological and surgical departments, a set of instruments for tracheotomy should always be ready, in a sterile condition.
2.3. The technique of tracheostomy and its types must be carefully read according to H.M. Penkovsky's manual "Otorhinolaryngology", I999/S. 125-129/

Task 3.
I. Wearing dentures; haste when eating; a bad habit of holding various objects in the mouth; compression of the lumen of the esophagus from the outside /tumors of the mediastinum, curvature of the spine/; atony, hypotonia of the esophagus; the presence of anatomical and physiological narrowings.
2. X-ray examination of the esophagus.
3. Esophagoscopy - removal of a foreign body.

Task 4.
Larynx, trachea, but rather bronchi.

Task 5.
X-ray examination of the esophagus.
Age-related decrease in the sensitivity of the mucous membrane of the oral cavity; dental factor

Problem 6.
In the resuscitation and intensive care unit.
1. 2% sodium bicarbonate solution, alkaline mineral water, milk.

S. TESTS OF SELF-CONTROL

1. A 5-year-old boy was taken by his parents to an otolaryngologist because he pushed a pea into the ear canal while playing. Otoscopic: AS – the skin of the auricle is not changed, a foreign body with a smooth surface is found in the external departments of the auditory canal. The tympanic membrane is not visible. What are the doctor's tactics?
A. Removal of a foreign body by washing with a Jeanie syringe.
B. Removal using a hook.
S. Removal with tweezers.
D. Removal by surgical intervention.
E. Appointment of anti-inflammatory drops in the ear
2. Which of the following factors depends most on the degree of esophageal burn:
A. Poison concentration, duration of effect on tissue.
B. The amount of poison.
C. Duration of action on the fabric.
D. The condition of the patient at the time of poisoning.

E. Nature of damage (acid, alkali).
3. The method of removing a foreign body from the larynx in a child:
. Bronchoscopy.
B. Indirect laryngoscopy.
S. Finger removal.
D. Through a tracheostomy.
E. Direct laryngoscopy.
4. At what time after a burn of the esophagus is it advisable to perform an esophagoscopy for diagnostic purposes?
A. On the first day.
A. On the 5th day.
S. On the 10th day.
D. On the 20th day.
E. On the 30th day.
5. The method of removing foreign bodies of the larynx in an adult:
A. Bronchoscopy.
B. Indirect laryngoscopy.
S. Finger removal.
D. Through the laryngofissure.
E. Direct laryngoscopy.
6. What chemicals cause coagulation necrosis of tissues in burns of the esophagus?
A. Acids.
V. Meadows.
S. Spirits
D. Phenols
E. Gasoline
7. Characteristics of organic foreign bodies of the respiratory tract, except:
A. Radiopaque
V. Nabuhayut
S. When removed, they crumble (secondary multiplicity of foreign bodies).
D. Disintegrate, cause rotting processes in the tracheobronchial tree.
E. Non-radiocontrast
8. What chemicals cause deeper changes in the walls of the esophagus during burns?
A. Acids.
V. Meadows.
S. Spirits
D. Phenols
E. Gasoline
9. Methods of diagnosis of foreign bodies of the upper respiratory tract, except:
A. Collection of anamnestic information (presence of short-term asphyxia at the time of passage of a foreign body through the glottis).
V. Physical methods.
S. X-ray of the larynx and lungs.
D. Esophagoscopy
E. Endoscopic methods.
10. Treatment measures in the first seven days after a burn of the esophagus:
A. Forced diuresis using 4% soda solution.
V. Fight against shock and dehydration.
C. Only anti-inflammatory treatment.
D. Corticosteroid drugs, antibiotics, rehydration, antispasmodics, analgesics, parenteral nutrition or diet No. 1.
E. Esophageal engorgement + measures specified in paragraph D.
11. Symptoms of foreign bodies and rhinoliths, except:

A. One-sided difficulty in nasal breathing, purulent runny nose, hyperemia of the nasal mucosa, granulation.
B. Atrophy of the nasal mucosa, wide nasal passages.
S. An unpleasant smell from the nose.
D. Nosebleeds.
E. Lacrimation, deterioration of smell, headache.
12. Treatment measures (the most important) in the first day after a burn of the esophagus.
A. Forced diuresis using 4% soda solution.
V. Fight against shock, intoxication, dehydration, laryngeal stenosis (when it develops), hunger, corticosteroid drugs, antibiotics.
C. Only anti-inflammatory treatment.
D. Corticosteroid drugs, antibiotics, rehydration, antispasmodics, analgesics, parenteral nutrition or diet No. 1.
E. Bugging of the esophagus + measures indicated in paragraph D.
13. The main methods of removing foreign bodies of the nose.
A. removal with a clamp.
B. removal using a fiberscope
C. removal using nasal tweezers.
D. anemization of the mucous membrane, removal with a probe, hook
E. removal with a hook; for large foreign bodies – crushing with bone forceps and subsequent removal with a hook.
14. Morphological changes in third-degree esophageal burns:
A. Lesions of the surface epithelial layer.
B. Damage to the entire thickness of the mucous membrane.
C. Necrosis of the mucous and muscular layers of the esophagus.
D. Transition of inflammatory changes to deep-seated formations (periesophageal tissue of the mediastinum).
E. All of the above
15. Basic methods of diagnosing foreign bodies of the nose.
A. Rhinoscopy, probing, radiography.
V. Echosinusoscopy, fibroscopy.
C. revision of the nasal cavity with nasal tweezers.
D. anemization of the mucous membrane, blowing
E. Posterior rhinoscopy.
17. How many degrees of esophageal burns are distinguished?
A. Three degrees.
B. Four degrees.
S. Five degrees
D. One degree.
E. Two degrees
18. A 7-year-old girl, while playing with beads, inserted one of them into the ear canal. The nurse on duty, who was called for help, tried to remove the foreign body with tweezers, but the attempt was unsuccessful - the bead got deep into the ear canal. The girl was taken to the ENT department. Objectively: during the examination, slight infiltration of the tissues of the left auditory canal is emphasized. A foreign body is visualized in the depth of the auditory canal, behind the isthmus. The tympanic membrane is not visible. An attempt to remove a foreign body from the ear canal by lavage was unsuccessful. What are the doctor's next tactics?
A. Surgical removal of a foreign body.
B. Removal of a foreign body with tweezers.
C. Removal of a foreign body with a hook.
D. Removal of a foreign body with a clamp.
E. Continue washing the ear canal
19. Anatomical stage of esophageal burn, during which the maximum development of connective tissue occurs.

A. Stage of necrosis (I stage).
B. II stage (ulcers).
C. III stage (granulation).
D. IV stage (scarring).
E. III-IV stages.
20. After esophagoscopy, a control x-ray of the neck in a lateral projection was performed in a patient who was strangled by a meat bone. On the image, narrow strips of air in the prevertebral soft tissues were determined. Your conclusion?
A. Perforation of the esophagus
B. Cicatricial narrowing of the esophagus.
S. Esophagus burn.
D. Acute esophagitis.
E. Mediastinitis
21. Which of the specified factors has the least effect on the degree of esophageal burns?
A. Poison concentration.
B. The amount of poison.
S. Duration of action on tissues.
D. The condition of the patient at the time of poisoning.
E. Nature of damage (acid, alkali).
22. A 7-year-old child drank a concentrated solution of caustic soda at the age of three. No treatment was carried out during that period of time and until now he felt well. 4 days ago the boy ate a small piece of fried lard and after that he does not eat or drink anything. The child is exhausted, the subcutaneous fat layer is weakly expressed, the tongue is dry, the child demands water, which he immediately throws back with vomiting movements. Pharynx and larynx without visible changes. What disease can you think of?
A. Cicatricial stenosis of the esophagus.
V. Food blockage.
C. Cicatricial stenosis of the esophagus. Food blockage.
D. esophagus tumor
E. esophageal diverticulum
23. On which of the following factors does the degree of esophageal burns depend the most:
A. Poison concentration, duration of effect on tissue.
B. The amount of poison.
S. Duration of action on tissues.
D. The condition of the patient at the time of poisoning.
E. Nature of damage (acid, alkali).
24. A 68-year-old patient came to the clinic with complaints of pain behind the sternum, between the shoulder blades and obstruction of food through the esophagus. Sick for 2 days. According to the patient, during lunch the prosthesis of the upper jaw broke and he swallowed part of it. Anti-inflammatory therapy is prescribed. On the second day, pain appeared behind the sternum and between the shoulder blades. On the day of application, t was up to 39.9. What is the treatment strategy?
A. esophagoscopy, pushing a foreign body into the stomach
B. Fibroscopy with removal of a foreign body
C. Mediastinotomy with removal of a foreign body
D. Esophagoscopy with removal of a foreign body, antibiotics
E. Diagnostic esophagoscopy
25. At what time after a burn of the esophagus is it advisable to perform an esophagoscopy for diagnostic purposes?
A. On the first day.
A. On the 5th day.
S. On the 10th day.
D. On the 20th day.
E. On the 30th day.

26. While eating. The patient choked on a fish bone. Tried to push through on my own by eating coarse food. A stabbing pain appeared, which worsens when swallowing. The ENT doctor of the polyclinic did not detect a foreign body. The next day, the symptoms increased and the patient went to the ENT clinic on his own. Indirect laryngoscopy showed edema and hyperemia of the mucous membrane of the sphenoid cartilages and the entrance to the esophagus. Diagnostic tactics:
A. consultation of phthisis specialist
B. Revision of this zone with the doctor's finger
S. antibiotics, hypopharyngoscopy
D. Prescribe antispasmodics, antibiotics
E. Diagnostic esophagoscopy
27. What chemicals cause coagulation necrosis of tissues in burns of the esophagus?
A. Acids.
V. Meadows.
S. Spirits
D. Phenols
E. Gasoline
28. A patient comes to the clinic with complaints of pain behind the sternum, between the shoulder blades and obstruction of food through the esophagus. Sick since day. According to the patient, she choked on a chicken bone during dinner. She did not ask for help. On the second day, the pain behind the sternum and between the shoulder blades increased. On the day of application t to 39. Preliminary diagnosis: foreign body of the esophagus (chicken bone). Treatment tactics:
A. general anesthesia, esophagoscopy with bone removal
B. local anesthesia with 10% lidocaine, esophagoscopy
S. Mediastinotomy with bone removal
D. Esophagoscopy with removal of a foreign body, antibiotics
E. Fibroscopy with removal of a foreign body
29. What chemicals cause deeper changes in the walls of the esophagus during burns?
A. Acids.
V. Luga.
S. Spirits
D. Phenols
E. Gasoline
30. A 68-year-old patient comes to the clinic with complaints of pain behind the sternum, between the shoulder blades and obstruction of food through the esophagus. Sick for 2 days. According to the patient, during lunch the prosthesis of the upper jaw broke and he swallowed part of it. Anti-inflammatory therapy is prescribed. On the second day, pain appeared behind the sternum and between the shoulder blades. On the day of application, t was up to 39.9 C. Diagnostic tactics:
A. consultation of a therapist
B. R-oscopy of the esophagus with barium
S. R- computed tomography
D. Bacteriological research
E. Diagnostic esophagoscopy
31. Treatment measures in the first seven days after a burn of the esophagus:
A. Forced diuresis using 4% soda solution.
V. Borotbaba with shock and dehydration.
S. Only anti-inflammatory treatment.
D. Corticosteroid drugs, antibiotics, rehydration, antispasmodics, analgesics, parenteral nutrition or diet #1.
E. Esophageal engorgement + measures specified in paragraph D.
32. A patient comes to the clinic with complaints of pain behind the sternum, between the shoulder blades and obstruction of food through the esophagus. Sick for 3 days. According to the patient, he choked on a chicken bone. She did not ask for help. On the second day, the pain behind the sternum and between the shoulder blades increased, in the evening the temperature reached 38 C. On the day of the application, t reached 39 C. Diagnostic tactics:

A. R-graphy of the esophagus
B. R-oscopy of the esophagus with barium
S. R- computed tomography
D. Bacteriological research
E. Consultation of a thoracic surgeon
33. Treatment measures (the most important) in the first day after a burn of the esophagus.
A. Forced diuresis using 4% soda solution.
B. Fight against shock, intoxication, dehydration, laryngeal stenosis (when it develops), hunger, corticosteroid drugs, antibiotics.
S. Only anti-inflammatory treatment.
D. Corticosteroid drugs, antibiotics, rehydration, antispasmodics, analgesics, parenteral nutrition or diet #1.
E. Bugging of the esophagus + measures indicated in paragraph D.
34. A patient came to the ENT doctor with complaints of a sore throat and a feeling of numbness. Connects the disease with eating fish two days ago. The patient tried to help himself by taking a large number of crusts of bread. About: a moderate edema of the mucous membrane of the pharynx on the left and small wound areas of the anterior palatine arch, palatine tonsil are determined. Between the bracket and the capsule of the palatine tonsil, the end of a small fish bone is determined. What are the treatment tactics of the doctor?
A. general anesthesia, remove with tweezers
B. anemization of the mucous membrane of the pharynx, remove with a clip
C. R-tomography of the pharynx, remove with a fiberscope
D. Remove with a Kocher clamp
E. Bacteriological examination of the pharynx
35. Morphological changes in third-degree esophageal burns:
A. Violation of the surface epithelial layer.
B. Damage to the entire thickness of the mucous membrane.
S. Necrosis of the mucous and muscular layers of the esophagus.
D. Transition of inflammatory changes to deeper formations (periesophageal tissue of the mediastinum).
E. All of the above
36. A 6-year-old girl was brought by her parents with complaints of cough and shortness of breath, which appeared after she inhaled a button. Objectively: the skin is pale, moist. Difficulty breathing appears during coughing, while the skin becomes bluish. ENT organs during examination without any features. The glottis is wide, the mucous membrane of the larynx is moderately hyperemic. In the subfold department - mucus. What are the doctor's diagnosis and tactics?
A. general blood test
B. anemization of the mucous membrane of the nose
S. R-scopy of the tracheobronchial tree, tracheobronchoscopy
D. consultation of a pediatrician
E. bacteriological research
37. How many degrees of esophageal burns are distinguished?
A. Three degrees.
B. Four degrees.
S. Five degrees
D. One degree.
E. Two degrees
38. A 3-year-old girl was brought to the clinic. Parents note that about 2 hours ago she was playing with a button and stuck it in the right half of her nose. The attempt to remove it failed, the button slipped into the depth of the nasal passage. Rhinoscopy: the mucous membrane of the nasal cavity on the right is hyperemic. A foreign body is found in the depth of the common nasal passage, nasal breathing on the right is difficult. How to remove a foreign body?
A. general anesthesia, remove with tweezers
B. anemization of the mucous membrane of the nose, remove with a hook

C. wash with a syringe
D. push into the nasopharynx and then into the oropharynx
E. Prescribe local anti-inflammatory drops
39. Anatomical stage of esophageal burn, during which the maximum development of connective tissue occurs:
A. Stage of necrosis (I stage).
B. II stage (ulcers).
C. III stage (granulation).
D. IV stage (scarring).
E. III-IV stages.

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4. www.dec.gov.ua/mtd/home/ - State Expert Center of the Ministry of Health of Ukraine
5. http://bma.org.uk– British Medical Association
6. www.gmc-uk.org- General Medical Council (GMC)
7. www.bundesaerztekammer.de – German Medical Association