Theme 13

Traumas, foreign bodies, bleeding of ENT organs.

1. Actually:
   Among all the pathology the diseases of the ear, nose and throat have the leading position. For instance, 6% of the population suffers from acute and chronic tonsillitis. The diseases of the nose, paranasal sinuses and the larynx are commonly accompanied by invalidity and result in severe complications such as intracranial, orbital and septic. This depicts the necessity of the awareness for general practitioners and other medical specialists to be able to perform all the diagnostic and treating procedures in case of emergency leisure.

2. The purpose of study:
On the basis of the clinical anatomy and physiology of the ENT-organs to teach the students to commit all the basic investigation procedures, its analyzing and reviewing. Besides, it’s essential to know how to perform the first aid giving in case of urgent situation such as nasal bleeding or intracranial complication.

2.1. Study tasks:
2.1.1. Student must know:
   1. Clinical anatomy of the nose, paranasal cavities, pharynx and larynx.
   2. Physiology and functions of the nose, paranasal sinuses, pharynx and larynx.
   4. Posterior rinoscopy and indirect laryngoscopy.
   5. Anterior and posterior nasal tamponade.
   2.1.1. Student have to be able to:
   1. To perform the external survey, palpation and percussion of the nose, paranasal cavities, pharynx and larynx and to analyze the results.
   2. Duly to handle the forehead reflector.
   3. To commit anterior rhinoscopy, pharyngoscopy and indirect laryngoscopy.
   4. To measure the external respiration (test with the cotton tampon)
   5. To be able to analyze the X-ray films.
   6. To be able to put on the nasal bandage.

3. Recreation of the basic knowledge accordingly to previous subjects.

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<thead>
<tr>
<th>Subjects</th>
<th>Student must know</th>
<th>Student have to be able to</th>
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<tbody>
<tr>
<td>Normal anatomy</td>
<td>Anatomy of the nose, paranasal cavities, pharynx, larynx. Blood supply, lymphatic drainage, innervation. The structure of the neck.</td>
<td>Visually to determine the anatomical structure of the nose, sinuses, pharynx and the larynx. Characterize the features of the blood supply, lymphatic drainage and innervation of these organs and their parts.</td>
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<tr>
<td>Physiology</td>
<td>Functions of the nose, paranasal</td>
<td>To investigate the mucociliat clearance and the nasal respiration.</td>
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sinuses, pharynx and larynx. Details of the nasal respiration, olfactory function. Mucociliary clearance. The role of the tonsils. Functions of the vocal cords and laryngeal muscles.

4. The program of individual study.

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<tr>
<th>№</th>
<th>Study tasks</th>
<th>Task confirmation</th>
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<tbody>
<tr>
<td>1</td>
<td>To study the clinical anatomy of the nose, paranasal sinuses, pharynx and larynx.</td>
<td>6. To know the walls of the nasal cavity. Nasal turbinates. 7. The foci of the nasal mucosa which may result in severe bleeding. 8. Paranasal cavities and their communication 9. Topography of the paranasal sinuses</td>
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2. Practical work algorithm.

1st step: study of the main anatomical, topographical and physiological aspects of the nose, paranasal structures, pharynx and the larynx.

2nd step: realizing of the methods of investigation of the nose, paranasal sinuses, pharynx and larynx (survey, palpation, rhynopneumometry, olfactometry, X-ray, CT, puncture of the maxillary sinus).


4th step: Development of the practical skills (examination of each other and examination of the patients under teacher’s control)

5th step: Main aspects of epistaxis arrest. Anterior and posterior nasal tamponade.

ENT-examination technique.
1. Common aspects.

Each ENT examination usually starts from general investigation which includes complaints (molestia), anamnesis, somatic examination, instrumental and laboratory investigation. Preparation for the examination.

- The hands are to be washed just before investigation, the posture of the investigator is to the right from the patient.
- Sit in front of the patient putting your legs closer to the table and patients legs are to be outer than investigator’s.
- The source of light is to be settled to the right from the patient, at the level of his right auricle in 10 cm from it.

II. External survey and palpation of the nose and paranasal sinuses.

This procedure is performed to reveal pathological changes: inflammatory, deformation of bony walls, movability, tenderness in case of nasal bones fractures or paranasal sinuses walls impact.

- Examine the external nose, the sites of the paranasal sunuses projection onto facial skin.
- Palpate the extrnal nose, the indexes of both hands place along the nasal spine and lightly massaging palpate the area of the nasal basis, agger, spine and tip of the nose.
- Palpate the anterior and posterior walls of the paranasal sines – put your both thumbs on the patient’s forehead and slightly compress, then move your thumbs to the upper wall of the orbit and then to medial it’s angle and also compress. Normally these manipulations are painless.
- Palpate anterior walls of the maxillary sinus to define weither it’s tenderness – put your thumbs in the fossa canina and slightly compress. Palpate the points of the second trigeminal branch. Normally the palpation of the anterior wall is not painful.
- Palpate the submandibular and profunde cervical lymphatic nodes to reveal possible lymphadenitis.

Submanibular lymphonodes are to be palpated in posture: the neck is bent forward, the fingers of investigator palpate the lymphatic nodes comporessing them to mandibula. Profunde cervical nodes are palpated unilaterally. The patent’s neck is flexed slight anteriorly. For example: while palpating the right side – investigator’s right hand is put on patient’s head, left hand palpating the naodes by light massaging movements forward from m.strenocleidomastoideus.

Examination of the pharynx:

Examine the neck, mucosa of the lips. Palpate the lymph nodes (submandibular, profunde cervical, posterior cervical, supra- and infraclavicular). In palpation on the left the left doctor’s hand is put on patient’s head, palpating the nodes by right hand. Posterior cervical nodes are palpated bilaterally along the posterior limb of the strenocleidomastiod muscle by the fingertips vertically and horizontally. Supra- and infraclavicular nodes are palpated unilaterally the same way as cervical ones.

Examination of the larynx.

First, examine the neck, larynx configuration. Palpate the larynx, its cartilages (cricoid, thyroid), reveal the “laryngeal cartilages crusting”. Normal larynx is painless, passively movable laterally.

Palpate the lymph nodes (submandibular, profunde cervical, prelaryngeal, pretracheal, paratracheal, supra- and infraclavicular).

Prelaryngeal lymphatic nodes are palpated by the fingertips vertically along the thyroid cartilage.
Paratracheal l/n are palpated to the forth from trachea within the suprasternal fossa. Moving the fingertips vertically.

Nasal respiratory function definition.

The definition of the respiratory function of the nose is performed unilaterally. First of all, one should start from cotton wool test. For example, while compressing the right nasal ala by using index, with usage of the left hand set the cotton wool near the left nostril. Make the patient to breathe in and out – study how cotton wool moves. The amplitude of wool movements depicts the degree of airflow.

Qualitative definition of the olfactory function is usually performed with the usage of special set of olfactory substances. The quantitative investigation is made by special device – olfactometer.

The set contains substances of the different graduated degree of olvactivity: the soap, wine spirit, tinct. Valerianae, and vinegar. To define the olfactory function one should put the open vessel of olfactory marker – vinegar, for example, and register whether the patient feels the smell.

If the patient is able to smell all the test markers, the olfactory function is appreciated as norm. If the patient feels only the hard, strong smells such as valeriana, vinegar, the olfactory function is decreased. If the patient is unable to smell the situation is called anosmia. The disturbances in small analyzing is cacosmia.

2. Endoscopy.

Using the reflector (forehead mirror).

First of all, the forehead mirror is to be set for light band direction – the rays of the light are to be directed to organ of investigation (settle the reflector by using belt, the mirror is to be set at the level of the left eye). The distance between reflector and object is to be about 25-30 cm (focal distance). By moving the reflector, direct the light band onto tip of the nose. Close the right eye and use only left one watching thru the mirror hole to see the light spot on the nasal tip. Then open right eye and continue survey (watching the light spot by both eyes).

2. Anterior rinoscopy:

This investigation is usually performed to study the condition of the nasal meatuses, mucosa, nasal septum and the nasal cavity contents.

- To study the vestibulum of the nose raise the nasal tip and examine opened vestibulum thru the nostrils. Normally the vestibulum is free of discharge, contains hairs.
- Anterior rhinoscopy is performed side by side. Put the nasal speculum onto your palm, and than grab the branches, though that’s the way how to hold it correctly. Elbow is to be down, hand with the speculum must be free and movable. Then try to insert the lips of the speculum into nasal vestibulum and open it to widen the nostril. Remember: avoid compressing the nasal septum – it may lead to pain.
- Examine nasal cavity, the patient’s head posture is regular. While examining the nasal cavity you have to observe the nasal mucosa, anterior parts of the inferior and middle nasal turbinates, anterior area of the septum.

    Ask patient to move his head downwards – then again try to perform anterior rinoscopy – in this situation you will see the inferior turbinates, the bottom of the nasal cavity. Then ask patient to move his head up – in this position while performing the rinoscopy you will see the middle nasal meatus and mucosa of the middle nasal turbinate. In that position you can also see the rima olfactoria. Compare the picture you observe to one of the reader (N84). You have to remember that speculum is to be pulled from the nasal cavity in open position – to avoid the vestibular hair impairment.

3. Endoscopy of the pharynx:
a) Endoscopy of the pharynx is performed to define the condition of the oral mucosa, teeth, gums, solid palate, tongue, excretion ducts of the salivatory glands, bottom of the oral cavity. Take the tongue depressor in your left hand (thumb – below, other fingers – above). Put your right hand onto patient’s head, ask him to open the mouth, then put the depressor into oral vestibulum and observe the condition of the mucosa, ducts of the salivatory glands (at the level of the upper premolars). Examine the oral cavity: teeth, gums, solid palate, tongue salivatory ducts. The bottom of the oral cavity is examined under the tongue (the tip of the tongue is to be dislocated upwards).

b) Mesopharyngoscopy is performed to define the condition of the posterior pharyngeal structures – the root of the tongue, palate tonsils, soft palate. While holding the tongue depressor in your right hand, depress the anterior 2/3 of the tongue trying not to touch the tongue. Depressor is to be inserted from the right side, the is depressed by the end of the depressor but not by its trunk. You should consider the possible vomiting reflex while the process of examining.

c) Define the move ability asking the patient say “A”. In normal situation both sides of the soft palate symmetrically movable. Examine the mucosa of the soft palate, uvula, anterior and posterior palate pillows. Normally the mucosa is pink, smooth, the pillows are contoured. Compare the picture you observe to fig. 29 in the reader. Define the size of the palate tonsils. To do this it’s essential to divide the distance between upper pole of the palate tonsil and line which lies vertically thru the middle part of the uvula, into 3 parts. The size of the tonsil equal to 1/3 of this distance – is the 1st degree, 2/3 – 2nd degree, if the tonsil spreads to middle line – 3d degree. Examine the surface of the tonsil. In norm, the mucous layer is pink, moist, smooth, the lacunar ostii are seen. Define the presence and character of the lacunas contents. To perform this take two tongue depressors. One depressor is used to depress the tongue, other – gently to compress the tonsil. Normally, lacunas contain poor mucous or epithelial fluid. The absence of any discharge is also normal.

Examine the mucosa of the posterior pharyngeal wall. In norm it’s pink, moist, smooth, the small lymphoid follicles are visualized.

d) Epipharyngoscopy – posterior rhinoscopy. These investigations are performed to define the condition of the nasopharynx, choanas, posterior parts of the turbinates and meatuses, ostiums of the Eustachian tubes.

Take the nasopharyngeal mirror, fix its handle, warm it in hot water or above the spirit candle flame to 40-45 C (to check the needed temperature compress the warmed mirror to the dorsal surface of your hand), than wipe it with napkin. Take the tongue depressor and move tongue inferiorly to make the most convenience of mirror insert. Ask the patient to breathe by nose. Take the mirror the same way as the pen and put into the oral cavity and adjust it to direct the reflecting surface straight to nasopharynx. Than insert the directed mirror beyond the soft palate trying not to touch the tongue root. By rotating the mirror examine the nasopharynx, observing it thru the mirror. You should examine the nasopharyngeal clivus, choanas, ostiums of the Eustachian tubes.

Normally the clivus of the nasopharynx does not contain the lymphatic tissue and discharge, the mucous layer is pink, choanas are empty, vomer is located along the middle line, the posterior parts of the turbinates are not outcome from the choanas. On the lateral pharyngeal walls one can observe the small openings countered by elevated mucosa – the ostii of Eustachian tubes.

e) Manual examination of the nasopharynx is performed to define the size of the pharyngeal tonsil, the condition of the choanas, walls of the nasopharynx. The patient sits, the doctor stays posteriorly and to the right. The investigator inserts the left index thru the cheek skin between the jaws of the patient to prevent biting. By using right index examine the nasopharynx and palpate the choanas, nasopharyngeal clivus, lateral walls.
f) Hypopharyngoscopy – this study is performed to define the condition of the valeculas, pyriform pockets and lateral walls of the pharynx.

The survey is performed in indirect laryngoscopy. Take the laryngeal mirror, fix its handle, warm it the same way as in posterior rhinosopy. Ask patient to open his mouth, pull out the tongue and deeply breathe by mouth. Using the gause tampon cover the tongue, grab it in your left hand; than insert the laryngeal mirror in the pharynx orient the reflecting surface to larynx. Than ask patient to sing “EEE”, than to breathe in. Try not to lose the light band.

In larynx you should examine the inferior parts of the pharynx. First of all the root of the tongue with the lingual tonsil is seen. Than you are to see the epiglottis. The mucosa of the epiglottis is normally pink or slightly yellow. The valeculas are seen right between the epiglottis and lingual tonsil.

By using mirror examine the posterior and lateral walls. The mucosa of these structures is pink, smooth. In phonation the pyriform sinuses are seen as fossas located laterally. The pyriform sines are free from discharge.

4. Indirect laryngoscopy: this investigation is performed to define the condition. The methodology is described in “Hypopharyngoscopy”. You should remember that the objects in the mirror view are situated upside down.

In indirect laryngoscopy you should see the root of the tongue with the lingual tonsil nearby. The mucous layer is usually pale pink.

In posterior part of the larynx the arythenoid cartilages mucosa is also seen and presented by two small knolls. The space between these cartilages is called interarythenoid one. In respiration the space between vocal cords is called vocal fissure. While patient breathes in it’s possible to see the upper parts of the trachea.

In norm the width of the vocal fissure in inspiration in adults: males – 17-19 mm, females – 15-17 mm. The vestibular folders are seen just above the vocal cords. The laryngeal ventricles are located between the vestibular and vocal folders, in laryngoscopy they are not seen.

The arythenolaryngeal folders spread from the arythenoid cartilages to epiglottis, they are usually pink and smooth. The pyriform sines are located outer from arythenolaryngeal folders. In deep respiration and phonation the motility of the larynx is to be registered.

3. Tests of that theme you can find in chapter 3.5 “Tests for the knowledge level definition of the students”.

4. The place of the class.

The auditoriums of the ENT dept of the CSMU named after S.I.Georgievsky within the clinical territory of Republican clinic named after N.A. Semashko and Republican pediatric clinic.

References:

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