

Notebook

Otorhinolaryngology

Medical Faculty
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Basic Level

Edited by Associate Professor Maciej Wróbel, MD, PhD, Professor at Nicolaus
Copernicus University

Clinic of Otolaryngology and Laryngological Oncology

Collegium Medicum in Bydgoszcz, Nicolaus Copernicus University in Toruń

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Materials prepared by the Team of the Department and Clinic of Otolaryngology and Laryngological Oncology at the Collegium Medicum, Nicolaus Copernicus University in Bydgoszcz

dr hab. n. med. M. Wróbel, prof. UMK

dr n. med. J. Kochan

dr n. med. K. Bilicka

dr n. med. A. Ślęzak

dr n. med. K. Romanowska

dr n. med. Hanna Czerniejewska-Wolska

lek. A. Kopczyński

lek. M. Orzechowska

lek. M. Kobusiński

lek. M. Ostrowska

lek. J. Strawa

lek. P. Szyderski

lek. W. Szatkowski

lek. M. Mizerski

lek. M. Tamowicz-Bosak

lek. J. Branewska

dr hab. med. M. Nowaczewska, prof. UMK (neurologist)

mgr Joanna Tomaszewska

mgr Marta Jaranowska

mgr Emilia Marach

Contact with the Department of Otolaryngology

Secretariat

tel. 52/ 585 47 10

e – mail : orlamb@cm.umk.pl

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DAY ONE

Diseases of the external ear, acute otitis media, complications of otitis media

Anatomy

- **External ear:** auricle, external auditory canal – cartilaginous and bony part, innervation, vascular bed
- **Middle ear:** temporal bone, tympanic cavity, mastoid air cells, eustachian tube, tympanic membrane – clinical and anatomical divisions, auditory ossicles, hypotympanum, mesotympanum, epitympanum, sigmoid sinus, internal jugular vein, internal carotid artery, middle cranial fossa, posterior cranial fossa, jugular bulb, jugular foramen, petrosal sinus, stapedius muscle, tensor tympani muscle, facial nerve
- **Inner ear:** cochlea, round window, oval window, semicircular canal, promontory, organ of Corti, hair cells, supporting cells, spiral ganglion, cochlear duct, saccule, utricle, perilymphatic/endolymphatic space, cochlear nerve, vestibular nerve

Symptoms

- Ear pain, ear discharge, hearing loss, impaired hearing, loss of taste/reduced taste sensation, facial asymmetry, vertigo, tinnitus, balance disorders

Pathologies and topics to cover

1. Otitis externa – diffuse and localized
2. Auricular hematoma, auricular skin injuries
3. Malignant otitis externa
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3. Speech audiometry
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Key Information

1. The only way to distinguish between primary and secondary ear pain is a thorough physical examination.
2. Secondary otalgia may be associated with any pathology located in 5 areas: the tongue, tonsil, pharynx, teeth, or temporomandibular joint.
3. Ear discharge – earwax, pus, blood, cerebrospinal fluid
4. Acute otitis media is one of the most common childhood diseases.
5. Orogenic intracranial or intratemporal complications should be treated as emergencies and require immediate treatment.
6. The sigmoid sinus drains into the internal jugular vein through its bulb.
7. High-resolution CT (HRCT) is essential for precise assessment of temporal bone pathologies.
8. MRI with non-epi DWI sequence can detect cholesteatomas as small as 2 mm.
9. Otitis externa resistant to treatment should always be differentiated from malignant tumors.
10. Barotrauma – ear injury caused by sudden air pressure changes – can occur after rapid decompression or recompression in an environment.
11. The light reflex is a good indicator of the condition of the tympanic membrane.
12. When draining an auricular hematoma, a pressure dressing should always be applied, unlike the loose dressing used after suturing a damaged ear, to maintain proper blood supply.
13. In cases of chronic skin changes in the ear region, allergies or fungal infections should be considered.
14. Sudden hearing loss requires immediate treatment.

Notes:

DAY TWO

Chronic otitis media. Surgical techniques. Inner ear. Hearing loss. Conservative and surgical treatment of hearing loss. Hearing implants

Anatomy and Physiology

Cochlea, organ of Corti, inner hair cells, outer hair cells, cochlear duct, saccule, utricle, semicircular canals, vestibular duct, labyrinth, cerebellopontine angle, perilymph, endolymph, endolymphatic sac, vestibulocochlear nerve, facial nerve

Symptoms

Hearing loss, ear discharge, deafness, vertigo, facial nerve paresis/paralysis, fistula symptom, nystagmus

Pathologies and topics to cover

1. Chronic otitis media
2. Simple chronic otitis media. Myringoplasty
3. Cholesteatoma
4. Tympanoplasty, ossiculoplasty
5. Conductive hearing loss
6. Sensorineural hearing loss
7. Mixed hearing loss
8. Sudden hearing loss
9. CAPD – Central Auditory Processing Disorders
10. Otosclerosis. Stapedotomy
11. Bone conduction implants, middle ear implants, cochlear implant

Examinations

1. Tuning fork tests – Weber, Rinne, Gellé, Schwabach
2. Pure tone audiometry
3. Speech audiometry
4. Impedance audiometry
5. BERA and ERA (auditory evoked potentials)
6. OAE – otoacoustic emission
7. Computed tomography (HR CT)
8. Magnetic Resonance Imaging (MRI)

Key Information

1. Unilateral hearing loss may be associated with CPA tumors, as well as unilateral tinnitus.
2. Hearing loss of genetic origin – mutations in the GJB2 gene are the most common.
3. Drug-induced hearing loss – mutations in the mtDNA-12SrRNA gene.
4. Syndromic (associated with syndromes) and non-syndromic (isolated) hearing loss.
5. Autism and other neurological disorders should be considered during hearing loss diagnostics.
6. Hearing aids: BAHA – bone conduction hearing aids, Cochlear implants, ABI – auditory brainstem implants.
7. Audiological symptoms may occur in systemic diseases such as GPA.
8. Acute or sudden vertigo can be an early symptom of central nervous system pathology.
9. The location and extent of acoustic trauma in the ear depend on the duration and intensity of the sound impulse – blast injury vs. gunshot.
10. Weber and Rinne tests are essential for the basic assessment of hearing damage.
11. The National Hearing Screening Program is an early detection and intervention program for hearing loss.
12. Unilateral conductive hearing loss in adults always requires further diagnostics.

Notes:

- **CPA** – cerebellopontine angle tumor
- **GPA** – granulomatosis with polyangiitis (formerly known as Wegener's granulomatosis)

DAY THREE

Diseases of the nose, paranasal sinuses, and nasopharynx

Anatomy

Nasal cavity, nasal vestibule, respiratory epithelium, olfactory epithelium, maxillary sinuses, frontal sinuses, anterior and posterior ethmoidal sinuses, sphenoid sinuses; inferior, middle, and superior nasal concha, ethmoidal roof, nasal cavity roof, crista galli, Eustachian tube, Rosenmüller's recess, nasal valve, lacrimal sac, sinus openings, semilunar hiatus, Kiesselbach's plexus, anterior ethmoidal artery, posterior ethmoidal artery, sphenopalatine artery, internal carotid artery, cavernous sinus, angular vein, Onodi cells, Haller cells, agger nasi cells, optic chiasm, optic nerves, pharyngeal tonsil

Symptoms

Nasal obstruction, discharge, nasal fluid leakage, anosmia/hyposmia, loss of taste/taste disturbances, hearing loss, nosebleed, double vision, tearing

Pathologies and topics to cover

1. Nasal septum deviation
2. Epistaxis (nosebleeds)
3. Foreign bodies
4. Maxillofacial complex fractures
5. Acute sinusitis
6. Chronic sinusitis
7. Nasal polyps
8. Intracranial complications of sinusitis
9. Orbital complications of sinusitis
10. Tumors of the nose and maxillofacial complex
11. Inverted papilloma of the maxillofacial complex
12. Pharyngeal tonsil hypertrophy
13. Juvenile nasopharyngeal fibroma
14. Thornwaldt cysts
15. Nasal tuberosity
16. Malignant tumors of the nasopharynx

Examinations

1. Olfactometry
2. Rhinomanometry
3. CT, MRI scans
4. Nasal endoscopy
5. Angiography / DSA

Key Information

1. Pathologies of the nasopharynx can cause hearing disorders due to Eustachian tube obstruction.
2. Unilateral otitis media with effusion in adults may be a symptom of nasopharyngeal pathology (malignancy, scarring, and fibrosis after localized radiation).
3. Unilateral polyps should be suspected of malignancy.
4. Recurrent nosebleeds may be associated with nasopharyngeal tumors.
5. Unilateral nasal obstruction, unilateral nosebleed, and unilateral pain or orbital symptoms should be considered significant – be attentive to unilateral changes.
6. Post-traumatic clear nasal discharge should raise suspicion of cerebrospinal fluid (CSF) leakage.
7. Tests: β -2 transferrin and intrathecal fluorescein are used to assess cerebrospinal fluid leakage.
8. Inverted papilloma is a benign tumor but may be locally aggressive.
9. Anosmia or hyposmia – early nonspecific symptom of SARS-CoV-2 and one of the main symptoms of upper respiratory infections.
10. Nasal septum perforation and other rhinological symptoms may result from systemic diseases such as GPA, diabetes, hypertension.
11. Epstein-Barr virus (EBV) is associated with certain nasopharyngeal tumors and cervical lymph node tumors.
12. Melanoma can occur in the nasal cavity.
13. Nasal bone fractures should be reduced as soon as possible.
14. In cases of familial recurrent nosebleeds, hereditary hemorrhagic telangiectasia (Rendu-Osler-Weber disease) should be suspected.

Notes:

- **DSA** – digital subtraction angiography
- **CSF** – cerebrospinal fluid
- **GPA** – granulomatosis with polyangiitis

DAY FOUR

Diseases of the oral cavity and oropharynx

Anatomy

Oral vestibule, boundaries of the oral cavity, foramen cecum, uvula, palatine tonsils, tongue, palatoglossal and palatopharyngeal arches, oropharyngeal isthmus, floor of the mouth, oral diaphragm, lingual nerve, hypoglossal nerve, Waldeyer's ring, taste buds, blood supply and innervation, parapharyngeal space

Pathologies and topics to cover

1. Unilateral enlargement of the palatine tonsils
2. Bilateral enlargement of the palatine tonsils
3. Tonsillitis, local and systemic complications of tonsillitis, peritonsillar abscess, parapharyngeal abscess. Plaut-Vincent angina
4. Soft palate asymmetry
5. Uvula bifida
6. Cleft palate
7. Tumors of the tongue
8. Inflammatory conditions of the oral mucosa
9. Ludwig's angina
10. HPV infections
11. Premalignant conditions of the oral cavity. Leukoplakia. Erythroplakia. Lichen planus
12. Foreign bodies in the throat
13. Oropharyngeal cancer
14. Cancer of the lip, floor of the mouth, tongue body – diagnosis and management

Examinations

1. Oral cavity and oropharynx endoscopy, bimanual examination of the floor of the mouth
2. Ultrasound (USG)
3. MRI
4. CT scan
5. Sialoendoscopy

Key Information

1. HPV infections and the risk of malignancy
2. Vernet's syndrome and Villaret's syndrome can be suspected based on oral examination
3. Dental infections can be the cause of serious oral diseases
4. Tonsillotomy vs. tonsillectomy
5. Tonsillitis vs. Pharyngitis
6. **Facial nerve palsy in a patient with a parotid gland tumor may indicate malignant transformation.**
7. Even subtle asymmetry of the soft palate and oropharyngeal isthmus should always be verified – consider tumors/pathologies of the parapharyngeal space, aneurysms, and infections.
8. Recurrent tonsil stones are not considered a pathology.
9. Uvula bifida is a contraindication for tonsil removal.
10. Cleft palate causes dysfunction of the soft palate and pharyngeal muscles, leading to inadequate middle ear ventilation.

Notes:

DAY FIVE

Diseases of the larynx, hypopharynx, and esophagus

Anatomy

Hyoid bone, thyroid cartilage, cricoid cartilage, arytenoid cartilage, cricothyroid ligament, epiglottis, thyrohyoid ligament, vocal cords, vestibular fold, trachea, motor and sensory innervation, piriform recess, esophagus

Symptoms

Hoarseness, shortness of breath, stridor, ear pain (otalgia), dysphagia, odynophagia

Pathologies and topics to cover

1. Bilateral vocal fold paralysis
2. Unilateral vocal fold paralysis
3. Acute laryngitis
4. Chronic laryngitis
5. Reinke's edema
6. Laryngocele
7. Dysphonia
8. RRP – recurrent respiratory papillomatosis
9. GERD – gastroesophageal reflux disease / LPR – laryngopharyngeal reflux
10. Subglottic stenosis
11. Tumors of the supraglottis/glottis/subglottis
12. Foreign bodies in the esophagus
13. Malignant and benign tumors of the larynx
14. Surgical treatment of laryngeal tumors, cordectomy, laryngectomy

Examinations

1. Videolaryngostroboscopy
2. GRBAS, RFS scales
3. Phonation time
4. pH-metry, esophageal manometry
5. VHI, RSI questionnaires

Key Information

Ear pain may be the first symptom of a supraglottic tumor.

1. The three "D's" – dysphonia, dyspnea, dysphagia – may indicate a laryngeal tumor.
2. Laryngeal mobility disorders can be influenced by thyroid, mediastinal, gastrointestinal, and central nervous system pathologies.
3. Leukoplakia, erythroplakia, and HPV types 16 and 18 are considered precancerous conditions.
4. Cidofovir is used for the treatment of laryngeal papillomatosis.
5. Coughing, throat clearing, and hoarseness may indicate gastroesophageal reflux disease (GERD).
6. The mucosa of the larynx and pharynx is more sensitive to gastric gland secretions than the esophagus, which is why GERD may manifest with symptoms only in the upper respiratory tract.
7. Any hoarseness lasting longer than 2 weeks must be examined by a laryngologist.
8. Stridor is a symptom caused by a narrowed or blocked airway. It can be inspiratory, expiratory, or biphasic.
9. Breathing and ventilation are not the same – differentiate this when examining a patient with dyspnea.
10. Unilateral vocal fold paralysis may be the first symptom of a mediastinal tumor.

Notes:

DAY SIX

Neck tumors and pathology of the salivary glands

Anatomy

Lymph nodes, neck triangles, inter-fascial spaces of the neck – fascia, carotid artery and branches, lymphatic drainage, cervical tuberculosis, vertebral artery, muscles – platysma, sternocleidomastoid, suprahyoid and infrahyoid muscles, submandibular glands, sublingual gland, parotid gland, Wharton's duct, Stensen's duct

Symptoms

Dyspnea, stridor, ear pain (otalgia), dysphagia, odynophagia, neck mass, cluster of enlarged lymph nodes

Pathologies and topics to cover

1. Cysts: lateral and median neck cysts
2. Cervical fistulas
3. Lymphadenopathy
4. CUP syndrome – cancer of unknown primary
5. Infection of the deep neck spaces, neck phlegmon
6. Tumors of the parapharyngeal space
7. Blunt neck trauma
8. Other tumor-like changes, including paragangliomas
9. Benign and malignant tumors of the salivary glands
10. Sialolithiasis (salivary gland stones)
11. Acute and chronic sialadenitis
12. Ranula
13. Facial nerve paresis and paralysis

Examinations

1. Indirect laryngoscopy, bimanual examination
2. Fiberoptic endoscopy of the pharynx and larynx
3. Indirect laryngoscopy
4. CT scan, angio-CT
5. Angiography
6. Ultrasound of the neck lymph nodes

Key Information

1. Tuberculosis is still a relevant topic and should be considered in the differential diagnosis of lymphadenopathy.
2. 60-90% of metastases to cervical lymph nodes have their primary location in the nasopharynx.
3. Soft tissue infections of the neck (e.g., cervical phlegmon) require aggressive treatment.
4. Deep neck space infections are life-threatening situations.
5. CUP syndrome requires fine-needle aspiration biopsy (FNAB) and panendoscopy.
6. In the case of blunt neck trauma, always refer the patient to a hospital.
7. Chylorrhea – iatrogenic injury to the thoracic duct in the neck.
8. Suspicious lymph nodes should always be referred for biopsy.
9. Facial nerve paresis in a patient with a parotid gland tumor may indicate malignant transformation.

Notes:

- **FNAB** – fine-needle aspiration biopsy

DAY SEVEN

Emergencies in Otorhinolaryngology

Anatomy and Physiology

Thyroid, cricoid cartilage, arytenoid cartilage, cricothyroid ligament, epiglottis, thyrohyoid ligament, vocal cords, vestibular fold, trachea, tracheal cartilages, motor and sensory innervation of the larynx, piriform recess, esophagus

Symptoms

Dyspnea, stridor, airway obstruction, bleeding, shock

Pathologies and topics to cover

1. Intubation, tracheotomy, cricothyrotomy – indications, contraindications
2. Causes of dyspnea in otolaryngology – laryngeal and extralaryngeal dyspnea
3. Local and systemic causes of nosebleeds
4. Anterior and posterior nasal tamponade, throat tamponade
5. Local and systemic management of bleeding
6. Otorhinolaryngological indications for hospitalization in case of bleeding
7. Embolization
8. Ligation of the external carotid artery
9. Inflammatory conditions of the larynx causing dyspnea
10. Carotid artery bleeding

Examinations

1. Indirect laryngoscopy
2. Fiberoptic endoscopy of the pharynx and larynx
3. Indirect laryngoscopy
4. CT scan, angio-CT
5. Angiography

Key Information

1. In patients with a tracheostomy, after accidental removal of the tube, it may be very difficult to reinsert it.
2. Maintaining the patency of the tracheostomy tube is crucial for patient safety.
3. Stridor is a symptom caused by a narrowed or blocked airway. It can be inspiratory, expiratory, or biphasic.
4. Chronic respiratory failure with prolonged intubation is an indication for tracheotomy.
5. Prolonged intubation predisposes patients to the formation of subglottic stenosis.
6. There are no absolute contraindications to intubation, but it should be avoided in cases of extensive facial, laryngeal, and pharyngeal trauma, laryngeal tuberculosis, and acute inflammatory conditions of the larynx, pharynx, and trachea associated with dyspnea.
7. Blood pressure measurement is an essential examination in the management and treatment of bleeding.

Notes:

DAY EIGHT

Otorhinolaryngological diagnostics of vertigo

Anatomy and Physiology

Inner ear: cochlea, round window, oval window, semicircular canal, promontory, organ of Corti, hair cells, supporting cells, spiral ganglion, cochlear duct, saccule, utricle, perilymphatic/endolymphatic space, cochlear nerve, vestibular nerve

Symptoms

Vertigo, tinnitus, balance disorders, hearing loss, ear discharge

Pathologies and topics to cover

1. BPPV – benign paroxysmal positional vertigo
2. Vestibular neuritis
3. Meniere's disease
4. Vestibular migraine
5. Tinnitus
6. Nystagmus
7. Vestibular schwannoma
8. Cerebellopontine angle tumor
9. Vascular-nerve conflict

Examinations

1. VNG – videonystagmography
2. Posturography, ENG – electronystagmography
3. VEMP – vestibular evoked myogenic potentials
4. Dix-Hallpike maneuver
5. Romberg and Unterberger tests
6. Rotational and caloric tests
7. Frenzel goggles

Key Information

1. "Otorhinolaryngological" vertigo never occurs with loss of consciousness.
2. Balance disorders require interdisciplinary diagnostics involving otorhinolaryngology, neurology, ophthalmology, and internal medicine.
3. Sudden deafness may be the first symptom of a vestibular nerve schwannoma (VIII nerve tumor).

Selected Topics

1. Facial nerve – pathology and topodiagnosics
2. Paragangliomas
3. Newborn hearing screening – the concept of early detection and early identification of hearing loss
4. GPA – granulomatosis with polyangiitis and other connective tissue disorders in head and neck pathology
5. Selective embolization – radiology
6. AIDS in the head and neck region
7. Cough – physiology and pathology in relation to otorhinolaryngology
8. Neurological symptoms in head and neck pathologies
9. Bacterial biofilms in chronic rhinosinusitis (CRS)
10. Ototoxic drugs and associated risk factors for hearing loss

Ear

1. Paracentesis
2. Mastoidectomy
3. Closed tympanoplasty (with preservation of the posterior wall of the external auditory canal) and open tympanoplasty (with removal of the posterior wall of the external auditory canal)
4. Tympanoplasty – types
5. Myringoplasty
6. Canaloplasty
7. Ossiculoplasty
8. Stapedotomy/Stapedectomy
9. Posterior tympanotomy
10. Cochleostomy
11. Petrosectomy
12. Cochlear implants – surgical procedure
13. Bone conduction implants – surgical procedure

Nose and Nasopharynx

1. Anterior and posterior nasal tamponade
2. Chemical and electrical coagulation (cauterization)
3. Conchoplasty
4. Septoplasty
5. Rhinoplasty
6. FESS – Functional Endoscopic Sinus Surgery
7. Antrostomy
8. Uncinectomy
9. Sphenoidectomy
10. Ethmoidectomy
11. Draf procedure types I, II, III
12. Lateral rhinotomy

13. AFCFR (Anterior Craniofacial Resection)Orbital exenteration (Orbitectomy)
14. Lateral canthotomy
15. Adenoidectomy
16. Endoscopic Dacryocystorhinostomy (DCR)

Oropharynx

1. Tonsillectomy/Tonsillotomy
2. Drainage of a peritonsillar abscess
3. LAUP – Laser-assisted uvuloplasty
4. UPPP – Uvulopalatopharyngoplasty
5. Parotidectomy
6. Submandibular gland removal
7. Extraction of stones from Wharton's duct
8. Sialoendoscopy
9. TORS – Transoral robotic surgery
10. Esophagoscopy
11. Mandibulectomy

Larynx and Lower Pharynx

1. Laryngoscopy – indirect and direct
2. Microlaryngoscopy
3. VLS – Videolaryngostroboscopy
4. Tracheoscopy
5. Bronchoscopy
6. Cordectomy
7. Partial laryngectomy
8. Total laryngectomy
9. Tracheotomy/Tracheostomy
10. Laryngotomy
11. Laterofixation – lateral abduction of vocal folds with a suture
12. Phonosurgery – augmentations, thyroplasties, etc.

Neck

1. Neck exploration through incision
2. Ligation of the external carotid artery
3. Lateral pharyngotomy
4. Lymphadenectomy

Medical Instruments and Equipment

1. Techniques and methodology of examination in Otorhinolaryngology:

- Otoscopy
- Rhinoscopy
- Laryngoscopy
- Oropharyngoscopy
- Videolaryngoscopy
- Fiberscopy
- Palpation examination of the neck, salivary glands, oral cavity

2. Instruments used during physical examination and for performing laryngological procedures:

- Headlamp
- Ear/nose speculums
- Mirrors: for posterior rhinoscopy/indirect laryngoscopy
- Spatulas
- Tuning forks
- Cotton holders
- Suction devices
- Hooks
- Hartman forceps
- Suction devices
- Catheters
- Tracheotomy tubes
- Voice prostheses

3. Medical equipment:

- Microscope
- Endoscope
- Visual systems
- Shaver
- Drills
- Facial nerve monitors
- Neuronavigation