ENT Notebook
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subjective perspective of important topics

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level basic

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Medical tools and equipment

1. Technique and methodology of examination in Otolaryngology

2. Tools used during physical examination

- head lamp

- ear / nasal specula

- mirrors: for posterior rhinoscopy / indirect laryngoscopy

- spatulas

- reeds

- watchers, mammals, etc.

3. Medical equipment

- microscopes

- endoscopes

- video tracks

- shavers

- drills

- facial sensors

- neuronavigation

Ear

Anatomy

External ear: auricula, external auditory canal – cartilage part/ bony part, innervation, blood supply,
Middle ear: temporal bone, tympanic cavity, mastoid cavity, Eustachian tube, tympanic membrane – clinical and anatomical division, 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 niche, oval window niche, semicircular canal, promontory, organ of Corti, hair cells, supportive cells, modiolus, spiral ganglion, cochlear duct, sacculus, utriculus, perilymphatic/endolymphatic space, cochlear nerve, vestibular nerve,

Symptoms:

Ear pain, ear drainage, hearing loss, hearing impairment, ageusia/hypogeusia (!), facial asymmetry,

Pathologies

1. Otitis externa – diffuse and circumscribe
2. Hematoma of the auriculae (othematoma)
3. Malignant otitis externa
4. Acute otitis media
5. Eustachian tube dysfunction
6. Mastoiditis
7. Simple tympanic membrane perforations
8. Chronic suppurative otitis media
9. Cholesteatoma
10. Otogenic extra- and intracranial complication
11. Tumors – skin, vascular derived, neuronal derived
12. Chronic otitis media with effusion
13. Otosclerosis
14. Trauma – noise, skin injures, bone fractures
15. Foreign bodies of the external auditory canal
16. Viral infections - ear zoster

Tests

1. Otoscopy/videootoscopy
2. Audiologic tests – pure tone audiometry, tympanometry
3. Tuning fork tests – Weber, Rinne, Gelle

4. Valsalva's test, Toynbee's test, Politzer's test
5. Fistula test
6. HR CT
7. MRI

Highlights

1. The only way to differentiate between primary and secondary ear pain is thorough physical examination
2. Secondary ear ache can be related to any pathology located within 5 T regions - tongue, tonsil, throat, teeth, TMJ
3. Ear discharge – ear wax, puss, blood, CSF
4. Acute otitis media is one of the most common childhood illnesses
5. Intracranial or extracranial otogenic complications should be considered as the emergency and require immediate treatment
6. Sigmoid sinus elongated with internal jugular vein, which begins with jugular bulb
7. HR - CT scans are essential for precise evaluation of TB pathologies
8. MRI scan – non epi DVI sequence can detect cholesteatoma as small as 2mm
9. External otitis refractory to treatment should always be differentiated with malignancy
10. Barotrauma – ear injury due to sudden change in air pressure – it can occur after rapid decompression or recompression in the environment
11. Light reflex of the tympanic membrane (TM) is good marker of TM condition and position
12. Tight compression dressing should always be applied in case of ear hematoma drainage, contrary to loose dressing after suturing injured ear to sustain proper blood supply.
13. Allergies or fungal infections should be considered in chronic skin changes within the ear
14. Sudden hearing loss requires immediate treatment.

Notes:

TM – tympanic membrane
TB – temporal bone
TMJ – temporomandibular joint

Audiology and neurotology

Anatomy and physiology

Cochlea, organ of Corti, inner hair cells, outer hair cells, cochlear duct, sacculus, utriculus, semicircular canals, vestibular duct, labyrinth, cerebellopontine angle, perilymph, endolymph, endolymphatic sack, vestibulocochlear nerve, facial nerve

Symptoms

Hearing loss, deafness, vertigo, dizziness, tinnitus, instability,

Pathologies

1. Conductive hearing loss
2. Sensorineural Hearing loss
3. Mixed hearing loss
4. Sudden Hearing Loss
5. CAPD – central auditory processing disorders
6. BPPV – Benign Paroxysmal Positional Vertigo
7. Vestibular Neuritis
8. Meniere Disease
9. Vestibular Migraine
10. Tinnitus
11. Nystagmus

Tests

1. Tuning fork tests – Weber, Rinne, Gelle
2. PTA – pure tone audiometry
3. Speech audiometry
4. Impedance
5. BERA - brainstem evoked response audiometry, ERA – electric response audiometry, ABR – auditory brainstem responses
6. OAE – otoacoustic emmissions
7. VNG – videonystagmography, ENG - electonystagmography
8. VEMP - vestibular evoked myogenic potential
9. Romberg’s test, Unterberger’s test,
10. Rotatory test, caloric testing

Highlights

1. Unilateral hearing loss can be related to CPA tumors, as well as the single side tinnitus
2. Genetics of hearing loss - *GJB2* gene mutations are the most common
3. Genetics of drug induced hearing impairment (mt DNA -*12SrRNA* gene mutations)
4. Syndromic and non-syndromic hearing loss
5. Autism and other neurological disorders in the course of hearing loss diagnostics
6. Hearing aids, BAHA- bone conduction hearing aids, Cochlear Implants, ABI – auditory brainstem implants
7. Systemic diseases such as GPA may cause audiological symptoms
8. Acute dizziness/sudden vertigo might be the first symptom of the central nervous system pathology
9. Location and extend of acoustic trauma in the ear depends on duration and intensity of sound impulse – explosion vs gunshot sound trauma
10. Weber's and Rinne's tests are essential for primary hearing impairment evaluation
11. National Hearing Screening Programs – Early detection and intervention in hearing loss
12. Unilateral conductive hearing impairment in adults should always be diagnosed

Notes:

Nose and nasopharynx

Anatomy

Nasal cavity, vestibule of the nose, respiratory epithelium, olfactory epithelium, maxillary, frontal, ethmoid anterior and posterior cells, sphenoid sinus; inferior, middle, superior turbinate, roof of the ethmoid, roof of the nasal cavity, crista gali, Eustachian tube, Rosenmuller recess, valve of the nose, nasolacrimal sac, openings of the sinuses, semilunar hiatus, Kiesselbach plexus, anterior ethmoid artery, posterior ethmoid artery, sphenopalatine artery, interior carotid artery, cavernous sinus, angular vein, Onodi cells, optic chiasm, optic nerves, adenoid,

Symptoms

Blocked nose, discharge, anosmia/hyposmia, ageusia/dysgeusia, hypoacusis, bleeding, diplopia, lachrymation

Pathologies

1. Septal deviation
2. Epistaxis
3. Foreign bodies
4. Fractures of the maxillofacial complex
5. Acute rhinosinusitis
6. Chronic rhinosinusitis
7. Nasal polyps
8. Sinogenic extra- and intracranial complication
9. Sinogenic orbital complications
10. Tumors of the nose and maxillofacial complex
11. Inverted papilloma of the maxillofacial complex
12. Adenoid Hypertrophy
13. Juvenile Nasopharyngeal Angiofibroma
14. Thornwald’s cysts
15. Rhinophyma
16. Malignant neoplasms of the nosopharynx

Tests

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

Highlights

1. Nasopharynx pathologies result in hearing perception due to Eustachian tube obstruction
2. Unilateral chronic otitis media with effusion in adults should be suspected for nasopharyngeal pathology (malignancy, scaring and fibrosis after local irradiation)
3. Unilateral polyps should be suspected for malignancy
4. Recurrent nose bleeding can be related to nasopharyngeal tumors.
5. Unilateral nasal obstruction, unilateral bloodstained discharge, and unilateral pain or orbital symptoms should be seen as red flags – be sensitive to unilateral leasions
6. Posttraumatic transparent discharge from the nose should be suspected of CSF
7. Usefulness of β-2 transferrin assay and intrathecal fluorescein for evaluation of CSF leak.
8. Inverted papilloma is a benign tumor, but can be locally aggressive.
9. Anosmia – the first no characteristic symptom of SARS Covid-2
10. Septal perforation and other rhinologic symptoms may result from systemic diseases such as GPA, diabetes, hypetension
11. EBV and its relation to the nasopharyngeal tumors
12. Melanoma can occur in nasal cavity
13. Broken nasal bones should be repositioned as soon as possible
14. Hereditary Hemorrhagic Teleangiectasia (Reandou–Osler–Weber disease) should be suspected in familial recurrent nasal bleedings

Notes:

Oral cavity and related structures

Anatomy

Vestibule of the oral cavity, borderlines of the oral cavity, foramen caecum, uvula, palatine tonsils, tongue, palatolingual arches, faucial isthmus, floor of the oral cavity, submandibular glands, sublingual gland, parotid gland, Wharton's duct, Stensen's duct, oral cavity diaphragm, lingual nerve, sublingual nerve, Waldeyer's ring, taste bundles, blood supply and innervation, parapharyngeal space

Pathologies

1. Unilateral enlargement of the palatine tonsil
2. Bilateral enlargement of the palatine tonsil
3. Tonsillitis, Peritonsillar abscess, Abscess of parapharyngeal space
4. Asymmetry of the soft palatine
5. Uvula bifida
6. Cleft palate pathologies
7. Infection – bacterial and viral
8. Tumors of the tongue
9. Inflammations of the oral cavity mucosa
10. Ludvigs' angina
11. Plaut-Vincent angina
12. Salivary glands tumors
13. Sialolithiasis
14. Ranula
15. HPV infections
16. Leucoplakia
17. Erythoroplakia

Tests

1. Oropharyngoscopy
2. USG
3. MR
4. CT
5. Sialoendoscopy

Highlights

1. HPV infections and risk of malignant tumors

2. Vernet's and Villaret syndrome can be suspected after oral cavity examination
3. Dental infections may result severe oral cavity diseases.
4. Tonsillotomy vs tonsillectomy
5. Angina vs pharyngitis.
6. Facial nerve paresis in patient with parotid gland tumor may indicate its malignant transformation.
7. Even subtle symmetry of the soft palate and faucial isthmus should always be verified - parapharyngeal space tumors/pathologies, aneurysms, infections should be taken into consideration
8. Recurrent tonsillar stones are not considered pathology
9. Uvula bifida is considered contraindication for tonsillectomy
10. Cleft palate results in muscular disfunction of the soft palate and pharyngeal muscles resulting in insufficient middle ear ventilation.

Notes:

Larynx, hypopharynx and esophagus

Anatomy

Hyoid bone, thyroid, cricoid, arytenoid cartilage, crico-thyroid ligament, epiglottis, thyro-hyoid ligament, vocal cord, vestibular fold, trachea, motoric and sensory innervation, , piriform recess, esophagus,

Symptoms

Hoarseness, dyspnea, stridor, ear pain (otalgy), dysphagia, odynophagia

Pathologies

1. Bilateral vocal cord paresis
2. Unilateral vocal cord paresis
3. Acute laryngitis
4. Chronic laryngitis
5. Edema Reinke
6. Laryngocele
7. Dysphonia
8. RRP – recurrent respiratory papillomatosis
9. GERD – Gastoroesophageal reflusx diseases
10. Subglotic stenosis
11. Epiglotic/ Glotic / Subglotic tumors
12. Foreign bodies of the esophagus
13. Tracheotomy , tracheotomy, cricothyrotomy, laryngotomy
14. Laryngeal dyspnea
15. Laryngeal injuries

Tests

1. Videolaryngostroboscopy
2. Voice evaluation (GRBAS)
3. Phonation time
4. pH metry, manometry of the esophagus

Highlights

1. Ear pain can be the first symptom of the epiglottic malignancy
2. D – dysphonia, D – dyspnea, D- Dysphagia – may indicate the laryngeal malignancy

3. Influence of thyroid, mediastinum, digestive tract, central neural pathologies for larynx motion impairment.
4. Leucoplakia, erytroplakia, HPV 16, 18 are precancerous conditions of the glottis
5. Cydofovir – new treatment of laryngeal papillomatosis.
6. Cough, grunting and hoarseness may indicate the garstro-esophageal reflux disease GERD
7. Each hoarseness last more than 2 weeks need to be examine by ENT specialist.
8. Stridor is a physical sign which is produced by narrow or obstructed airway path. It can be inspiratory, expiratory or biphasic
9. Breathing and ventilation is not the same – differentiate once consulting patient with shortness of breath
10. Unilateral vocal cord paresis might be the first symptom of the mediastinal malignancy
11. In patients with tracheotomy (not tracheostomy), after accidental tube removal it can be extremally difficult to place it back
12. Keeping tracheotomy tube patent is outmost important in terms of patients safety

Notes:

Neck

Anatomy

Lymph nodes, neck spaces, aponeurotic neck system - fascia, carotid artery and branches, lymphatic drainage, tuberculum caroticum, vertebral artery, muscles – platysma, sterno-cleido-mastiod, ohmo-hyoid muscle,

Pathologies

1. Cleft cysts – lateral, middle line
2. Cervical fistulas
3. lymphadenopathies
4. CUP – carcinoma of unknown primary
5. Deep neck infection, cervical phlegmon
6. Parapharyngeal tumors
7. Blunt neck trauma
8. Other neck masses eg. paragangliomas

Highlights

1. Tuberculosis is still up to date – it should be considered in differential diagnosis of lymphadenopathies
2. 60-90% incidence of cervical lymph-nodes metastases have primary location in nasopharynx.
3. Neck soft tissues infections (eg. Cervical phlegmon) require aggressive treatment.
4. Deep neck infection are life threating situations
5. CUP syndrome diagnosis includes FNAB and pan-endoscopy
6. In case of blunt neck trauma always refer patient to the hospital
7. Chyalorrhea – iatrogenic injury of the thoracic duct on the neck
8. Suspected lymph nodes should be referred for biopsy

Notes:

Selected topics

1. Facial nerve – pathology and topodiagnostics
2. Glomus tumors – paragangliomas
3. Neonatal Hearing Screening - idea of early detection and early identification of hearing loss
4. GPA – Granulomatosis with polyangiitis and other connective tissue disorders within head and neck pathologies
5. Selective embolization – radiology
6. AIDS in head and neck region
7. Cough – physiology and pathology in relation to ENT
8. Neurological symptoms in head and neck pathologies
9. Bacterial biofilms in CRS
10. Ototoxic drugs and related risk factors of hearing loss

Notes:

Surgical procedures - interventions

Ear

1. Paracentesis – myringotomy
2. Mastoidectomy
3. CWU – canal wall up/CWD – canal wall down – open cavity
4. Tympanoplasty - types
5. Myringoplasy
6. Canaloplasty
7. Ossiculoplasty
8. Stapedotomy/Stapedectomy
9. Posteritor tympanotomy
10. Cochleostomy
11. Petrosectomy
12. Cochlear implant surgery
13. Bone Conduction Implants surgery

Nos and nasopharynx

1. Anterior/ Posterior tamponade/ nasal packing
2. Coagulation of bleeding mucosa
3. Conchoplasty
4. Septoplasty
5. Rhinoplasty
6. FESS – functional endoscopic sinus surgery
7. Antrostomy
8. Uncinectomy
9. Sphenoidectomy
10. Etmoidectomy
11. Draf surgery
12. Lateral rhinotomy
13. AFCFR – anterior fossa craniofacial resection
14. Orbitectomy
15. Lateral canthotomy
16. Adenotomy
17. Dacryo-rhino-cystostomy

Oral cavity and related structures

1. Tonsilectomy/tonsilotomy
2. Peritonsillar abscess drainage
3. LAUP – laser associated uvuloplasy
4. UPPP – uvulo-palato-pharyngo-plasty
5. Parotidectomy
6. Submandibular gland removal
7. Sialoendoscopy
8. TORS – transoral robotic surgery
9. Esophagoscopy
10. Tumor recections – mandibluectomies,

Larynx and related structures

1. Laryngoscopy – direct, indirect
2. Microlaryngoscopy
3. VLS – laryngostroboscopy
4. Trachoscopy
5. Bronchoscopy
6. Chordectomy
7. Partial laryngectomies – OPHL – open partial horizontal laryngectomies
8. Total laryngectomy
9. Tracheotomy/ Tracheostomy
10. Laryngotomy
11. Laterofixation
12. Phonosurgery - vocal fold injection, thyroplasty.

Neck

1. Neck dissection
2. Exteral cartorid artery ligation
3. Lateral pharyngotomy
4. lymphadenectomy