OBJECTIVES

1. Identify important anatomic structures of the ears, nose, and throat
2. Assess and treat disorders of the external, middle, and inner ear
3. Assess and treat disorders of the nose and paranasal sinuses
4. Assess and treat disorders of the oropharynx and larynx
5. Educate patients on the risk factors for head and neck cancers
Trauma

- Variety of presentations.
- Rule out temporal bone trauma (battle's sign & hemotympanum). CT head w/out contrast.
- Tx lacerations/avulsions with copious irrigation, closure with dissolvable sutures (monocryl), tetanus update, and antibiotic coverage (anti-Pseudomonal). May need to bolster if concerned for a hematoma.

Auricular Hematoma

- Due to blunt force trauma.
- Drain/aspirate, cover with antibiotics (anti-Pseudomonals), and apply bolster or passive drain if needed.
- Infection and/or cauliflower ear may result if not treated.

Chondritis

- Inflammation and infection of the auricular cartilage, usually due to Pseudomonas aeruginosa.
- Cultures
- Treat with empiric antibiotics (anti-Pseudomonal) and I&D if needed.
- Differentiate from relapsing polychondritis, which is an autoimmune disorder.
External Auditory Canal
Foreign Body

- Children – Foreign bodies
- Adults – Cerumen plugs

- May present with hearing loss, ear pain and drainage
- Exam under microscopic otoscopy. Check for otitis externa.
- Remove under direct visualization. Can try to neutralize bugs with mineral oil. Do not attempt to irrigate organic material with water as this may cause an infection. Treat any infection with drops (Ciprodex/CiproHC).

Acute Otitis Externa

- Usually bacterial - *Pseudomonas aeruginosa*.
- Ear fullness, drainage and tragal motion tenderness.
- Debridement and antibiotic drops (Ciprodex/CiproHC) +/- otowick.
- Watch for malignant otitis externa in immunocompromised patients (i.e. diabetics).

*Ramsey-Hunt* = varicella zoster virus. Vesicles in ear canal with facial paralysis, hearing loss and vertigo (CN7 and CN8 palsies). Treat with antivirals and steroids. MRI brain to rule out skull base tumor if no improvement.

Chronic Otitis Externa

- Fungal vs. dermatologic

- Treat both with debridement. Treat fungal with acidifying drops (Acetic acid) or topical antifungal drops (Clotrimazole). Treat dermatologic with steroid creams or drops (Triamcinolone).
Malignant Otitis Externa

- *Pseudomonas aeruginosa.*
- Elderly, diabetics and other immunocompromised patients are at high risk.
- Symptoms consistent with AOE but patient is SICK.
- CBC shows leukocytosis. Diagnosis confirmed by exam findings of ear canal granulation and CT head showing skull base osteomyelitis. Cultures important.
- Complications include cranial neuropathies, brain abscess, meningitis, septicemia and death.
- Hospital admission. Treat with ear canal debridement, topical drops, parenteral antibiotics and reversal of immunosuppression. Surgery indicated in many cases.

Middle Ear Disorders

Middle Ear Anatomy

Middle Ear Ossicles:
- Malleus
- Incus
- Stapes
Tympanic Membrane Perforation

- Most common cause is otitis media.
- Diagnosis is made by exam and supported by an audiogram.
- Water precautions.
- 95% resolve without treatment. Tymanoplasty for refractory cases.

Barotrauma

- Due to abrupt pressure changes (flying, diving, forceful valsala).
- Sx: Ear pain, hearing loss, and tinnitus
- Si: Hemotympanum, bloody otorrhea and TM perforation.
- Audiogram
- Treatment is supportive. Follow up if TM perforated.

Eustachian Tube Dysfunction

- Eustachian tube inflammation or blockage resulting in negative middle ear pressure
- Sx: Ear fullness, recurrent middle ear effusion, and hearing loss.
- Si: Retracted tympanic membrane with prominent bony landmarks.
- Diagnosis made by clinical exam and tympanogram (Type C).
- Treat with corticosteroid nasal spray, allergy mgmt, decongestants, vasaivas and pressure-equalizing (PE) tubes for refractory cases.
Acute Otitis Media

- Middle ear infection <3 weeks in duration.
- *Strep pneumo* (most common), *H. influenza*, and *Moraxella*.
- Sx: Otalgia, hearing loss, fever.
- Si: Hyperemic/thickened and bulging TM.
- Antipyretics, analgesics, decongestants and antibiotics - 1st line = amoxicillin. Myringotomy/PE tubes for recurrent OM.

Otitis Media with Effusion

- a.k.a. Serous Otitis Media
- Persistence of fluid in the middle ear space without infection.
- Usually due to eustachian tube dysfunction.
- Sx: ear fullness and hearing loss.
- Si: amber-colored fluid behind the TM with an air fluid level or bubbles.
- Treat with observation, topical nasal steroids or decongestants. PE tube placement optional.
- Nasopharyngeal exam for any adult with persistent, unilateral middle ear effusion.

Chronic Otitis Media

- 3 or more episodes of otitis media in 6 months or at least 4 episodes in 12 months.
- Gram negative bacteria (*Pseudomonas*), *Staph* and anaerobes.
- Can be due to chronic eustachian tube dysfunction, cholesteatoma or TM perforation.
- Diagnosis by clinical exam, audiogram and CT (if concern for mastoiditis or cholesteatoma).
- Treat with oral abx (*Pseudomonal* coverage – quinolones), +/- cleaning of EAC and otic drops (ciproflox) if perforation or drainage into EAC.
Cholesteatoma

- The presence of squamous epithelium in the middle ear and mastoid cavities.
- Risk factors include chronic eustachian tube dysfunction, TM perforation, trauma, or congenital.
- Patients present with chronic suppurative otitis media (chronically draining ear).
- Conductive hearing loss.
- Diagnose with exam, CT head, and audiogram.
- Treat with surgical removal.

Mastoiditis

- Inflammation and/or infection of the mastoid air cells.
- Inflammation: May be asymptomatic with normal exam.
- Infection: Ear pain and drainage with tenderness, erythema and edema over the mastoid process.
- Diagnose with CT head. Culture necessary if infection.
- Refer to ENT. May start empiric oral antibiotics if immunocompetent. Mastoidectomy and consideration of IV antibiotics if recalcitrant disease or immunocompromised.

Inner Ear Disorders
Inner Ear Anatomy

Hearing Loss

• Three types:
  • 1. Sensorineural Hearing Loss
  • 2. Conductive Hearing Loss
  • 3. Mixed Hearing Loss

Weber-Rinne

• Weber – Place 512Hz tuning fork on forehead. Sound heard equally in both ears if normal or equal deafness. Sound lateralizes to one side if a conductive loss on that side or a sensorineural loss on the opposite side.

• Rinne – Done on side of Weber lateralization. Tuning fork is placed on mastoid tip (BC) then beside the ear (AC). Conductive hearing loss on ipsilateral side if BC>AC. Sensorineural hearing loss on contralateral side if AC>BC.
Audiogram

Tympanogram

• Type A – normal middle ear function.
• Type B – restricted TM mobility.
• Type C – negative middle ear pressure.

Acute Sensorineural Hearing Loss

• Sudden onset of hearing loss with or without dizziness
• Etiology: viral, autoimmune, drug-induced ototoxicity, acoustic neuroma, others
• Confirm diagnosis with audiogram
• MRI brain
• Treat empirically with oral steroids. Follow up after completing medications with repeat audiologic testing.
Acoustic Neuroma

- Benign tumor of CNVIII
- Patient’s may present with sudden hearing loss, tinnitus and +/- vertigo.
- Audiogram shows asymmetric SNHL
- Confirm with MRI
- Observation vs. surgery vs. stereotactic radiation.

Tinnitus

- Perception of sound, in the absence of external source.
  - Ringing, waves, “whooshing”, wind, buzzing
  - Continuous or intermittent, unilateral or bilateral
  - Typically associated with high frequency sensorineural hearing loss
- Evaluation: Audiogram
- Treatment: Patient education, bio-feedback, masking
- Unilateral Tinnitus: MRI internal auditory canals; and ENT referral
- Pulsatile Tinnitus: MRA/MRV head and neck; and ENT referral

Vestibular Disorders

- James Stewart Kim Novak
  - Vertigo: Vertigo Mastery
**Benign Paroxysmal Positional Vertigo**

- Vertigo lasting *a few seconds to one minute*, initiated by head movement, +/- nausea, no hearing loss.
- Diagnosis: Dix-Hallpike
- Treatment: Canalith repositioning using Epley Maneuver.

**Vestibular Neuritis**

- Vertigo lasting *hours to days*, + nausea, **no** hearing loss.
- Usually acute onset after URI, slow recovery over 6-8 weeks.
- Treatment: Vestibular rehabilitation with physical therapy. Avoid vestibular suppressants (i.e. meclizine).

**Vestibular Labyrinthitis**

- Vertigo lasting *hours to days*, with hearing loss +/- tinnitus.
- Acute onset after URI.
- Treatment: Vestibular rehab. Oral steroids due to hearing loss.
- Audiogram to confirm hearing loss. MRI to r/o acoustic neuroma. Repeat audiogram after completes course of steroids.
Meniere’s Disease

- Episodic vertigo lasting minutes to hours, hearing loss, tinnitus, ear fullness.
- Recovery between episodes may be incomplete, resulting in a progressive hearing loss.
- Treatment: low salt diet, diuretics, vestibular rehabilitation, vestibular suppressants, and surgical ablation.

Rhinology

Nasal Disorders
Nasal Anatomy

Nasal Anatomy cont...

Nasal Fracture

• Traumatic
• Watch for septal hematoma and CSF rhinorrhea.
• Ice and pain med if mild. Immediate vs. delayed repair if severe or displaced.
Nasal Foreign Body

- Children
- Unilateral, malodorous, purulent nasal discharge
- Remove under direct visualization

Allergic Rhinitis

- Seasonal vs. Perennial
- Sx: Sneezing, congestion and rhinorrhea.
- Si: Nasal crease (“allergic salute”), clear rhinorrhea, boggy nasal mucosa, and periorbital puffiness (“allergic shiners”).
- Diagnosis: Allergy testing (Skin prick & RAST)
- Treatment: Immunotherapy, allergy avoidance, saline irrigations, oral antihistamines, topical antihistamines, topical glucocorticoids.

Non-Allergic Rhinitis

- Various Etiologies:
  - Infectious (bacterial vs. viral)
  - Hormonal (pregnancy/menopause)
  - Atrophy (iatrogenic)
  - Rhinitis Medicamentosa (afrin)
  - Vasomotor Rhinitis (irritant exposure, age-related, headache disorders)
- Signs and symptoms may be similar to those found in allergic rhinitis. Treatment is specific to the underlying cause.
Epistaxis

Anterior vs. posterior bleeds.

Most common site – Kiesselbach’s Plexus (convergence of vessels on the anterior septum)
- Chronic epistaxis in kids: r/o juvenile nasopharyngeal angiofibroma
- Risk factors: dryness, trauma, nasal sprays, anticoagulants, structural deformity
- Treatment options include simple control (apply topical vasoconstrictor and hold pressure), cauterization (silver nitrate), nasal packing, embolization and surgery

Nasal Polyposis

- Strangulation and swelling of the nasal mucosa due to chronic irritation.
- Sx: nasal congestion, facial pressure, decreased smell, and rhinorrhea.
- Si: boggy, pale, grape-like clusters of nasal mucosa.
- Dx: Clinical Exam, CT sinuses and allergy assessment.
- Treatment varies – Observation for non-obstructive polyps, For obstructive polyps, an acute burst of oral steroids followed by chronic topical nasal steroid sprays. Surgery for refractory cases.

Sinus Disorders
Acute Sinusitis

- Inflammation and infections of the paranasal sinuses lasting 7 days to 4 weeks.
- Viral vs. Bacterial, *S. pneumo*, *H. influenza* and *M. catarrhalis*.
- Nasal congestion, discolored nasal discharge, and facial pressure, +/- teeth pain.
- CT sinuses = gold standard diagnostic tool.
- Treat viral conservatively. Treat bacterial with saline irrigations, nasal steroids, and antibiotics (Amoxil – 1st line).
Chronic Sinusitis

- >8 weeks.
- Usually Staph aureus, Pseudomonas.
- Headache, facial pressure, fatigue, nasal congestion, purulent nasal d/c, anosmia
- Refer to ENT for nasal endoscopy. CT scan.
- Treat with antibiotics (Augmentin - 1st line) (Cipro – 2nd line), oral steroid taper, topical nasal steroids and saline flushes. Surgery for cases refractory to medications.

Periorbital & Orbital Cellulitis

- Periorbital Cellulitis – aka preseptal cellulitis. Inflammation and infection of the eyelid skin and soft tissues. Staph aureus or Strep pneumo. No pain on eye movement. Eye exam and maxillofacial CT. Treat with warm compresses and antibiotics (keflex).
- Orbital Cellulitis – Infection of eye tissues posterior to the orbital septum. Staph aureus or Strep pneumo. Pain with eye movement. Eye exam and maxillofacial/head CT. Surgical emergency. IV antibiotics (vanco + cephalosporin).

Fungal Sinusitis

- Three types:
  - Allergic fungal sinusitis - Immunocompetent patients. Allergic reaction to an environmental fungus. Usually involves bilateral nasal and sinus cavities.
  - Fungal ball/mycetoma – Immunocompetent patients. Growth of fungal debris usually within a single, isolated sinus cavity.
  - Invasive fungal sinusitis – Immunocompromised patients. Can be a life-threatening “flesh eating” infection. Usually starts on middle turbinate or septum and progresses rapidly to surrounding structures.
Laryngology

Oropharyngeal Disorders

Oropharyngeal Anatomy
Aphthous Ulcers

- Multiple etiologies: viral, nutritional, autoimmune, trauma, food allergy, etc.
- Painful, round, shallow ulcer with yellow-gray fibrinous center.
- Treatment is conservative – Ulcers usually will resolve within a week. May use topical analgesics vs steroids (kenalog with orabase).

Oral Herpes Simplex

- HSV 1 – cutaneous and oral mucosa.
- HSV 2 – genital.
- Grouped vesicles on an erythematous base (dew drops on rose petals). These will eventually erupt and form shallow ulcers similar to aphthous ulcers.
- Tzanck Smear shows multinucleated giant cells.
- Topical antiseptics and oral antivirals.

Oral Candidiasis

- a.k.a. oral thrush
- Candida albicans
- Sx: Pain, slight bleeding, loss of taste, etc.
- Si: Mucosal erythema and white patches. Lesions may bleed when scraped.
- Common in immunocompromised patients (babies), after excess oral antibiotic use and with use of corticosteroid inhalers.
- Treat with probiotics (yogurt), topical antifungals ( clotrimazole troches), or oral antifungals (diflucan).
Dental/Gingival Abscess

- Panorex
- Refer these patients to their dentist after I&D.

Oral Leukoplakia

- A white patch.
- The most common premalignant lesion of the oral cavity. Represents cancer until proven otherwise with biopsy.
- Usually due to chronic irritation (tobacco).
- Follow closely for malignancy transformation.

Infectious Mononucleosis

- **Ebstein-Barr Virus**
- Sxs: Malaise, fever and severe sore throat
- Signs: oropharyngeal exudate, **posterior cervical lymphadenopathy**, splenomegaly. Rash if given a penicillin.
- Diagnose with exam and Monospot test.
- No contact sports for a month after diagnosis (splenic rupture).
- Treat symptomatically with fluids, analgesics and possibly steroids if airway concern.
Acute Pharyngitis
Tonsillitis

- Etiology: *most commonly viral*. Bacterial causes include Group A, C and G Strep and Mycoplasma.
- Sx: Fever, sore throat, odynophagia.
- Si: Red swollen and exudative tonsils, cervical lymphadenopathy, and halitosis.
- Culture (gold standard) vs Rapid Strep (RSAT)
- Antibiotics (for + GAS culture): 1st line Penicillin or erythromycin if PCN allergic x 10 days

Peritonsillar Abscess

- Extension of a tonsil infection into the retropharyngeal space.
- Drooling, trismus, fever, soft palate asymmetry and “hot potato voice”.

Laryngeal Disorders
Laryngeal Anatomy

ANATOMY OF THE LARYNX

LARYNGOSCOPIC VIEW

Laryngitis

- Inflammation of the laryngeal mucosa.
- Acute causes include viral infection, vocal abuse, trauma, and inhaled toxin exposure.
- Chronic causes include GERD, voice misuse, allergies, and smoking.
- Treatment depends on cause. Send to ENT for direct laryngeal exam if hoarseness >3-4 weeks.

Croup

- Laryngotracheobronchitis
- Parainfluenza Virus
- Common in children
- "Barking seal" cough, stridor, hoarseness, and fever.
- Steeple sign on AP neck Xray
- Be prepared for intubation!
- Treatment: IV steroids and O2 (if sats less than 92%). Consider nebulized epinephrine if signs of stridor or chest retractions.
- Get your vaccinations!
Epiglottitis

- *H. influenza*
- Leaning forward (tripod sign), fever, drooling, and stridor.
- Thumb sign on lateral neck x-ray
- Be prepared for intubation!

Other Head & Neck Stuff

Salivary Gland Anatomy
Sialadenitis

- Inflammation and/or infection of the salivary glands (submandibular, sublingual, parotid).
- Acute – usually infection from *Staph aureus*. Treat with compresses, massages, sialogogues, hydration, and antibiotics (Augmentin; Clinda).
- Chronic – r/o systemic disease, dry mouth from medications, radiation or surgical scarring, and salivary duct stones. Have a low threshold for neck CT given possibility of salivary gland tumor.

Laryngeal Cancer

Oral Cancer
Head & Neck Cancers

Educate your patients!

They Might Listen...

WARNING: Cigarettes are addictive.
Thank You!

Post-Graduate PA Fellowship in ENT/Head and Neck Surgery

- 12 month: October-October
- 2 fellows/year
- Contact: donald.carrlene@mayo.edu