Management of Common Problems in Otolaryngology

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Disclosures
• None

Otolaryngology – Head and Neck Surgery

• Specialty formerly known as ENT
• Early Nights and Tennis
• Easy, Not Tough
• Case-based review of common and uncommon problems

Ear: Hearing Loss
Case #1

- 72 y/o woman with hearing loss and tinnitus
- Otologic History
  - No vertigo, otalgia, or otorrhea
  - No history of prior surgery or frequent infections
  - + history of hearing loss in family (father and grandfather)
  - Went to “Rock concerts” in the sixties

Case #1

- PMH: none
- Meds: none
- Exam
  - Cranial nerves: V and VII normal
  - Ear: Normal appearance of tympanic membrane

Tuning fork tests (512 Hz)
- Weber: Midline
- Rinne: Air conduction > Bone Conduction Bilaterally

Weber & Rinne Tests
Audiogram

Diagnosis
- Presbycusis
- Treatment
  - Consideration of Hearing Aids
  - Listening strategies and assistive devices
  - Avoidance of noise exposure
- New Frontiers:
  - Implantable hearing aids
  - Cochlear Implants “partial insertion”

Case #2
- 36 y/o woman with hearing loss and tinnitus
- Symptoms worse on right side
- Otologic History
  - No vertigo, otalgia, or otorhea
  - No prior ear surgery
  - No history of ear infections
  - + family history of hearing loss (mother in late 20’s)
  - No history of noise exposure
Case #2

- PMH: recently delivered first child
- Meds: none
- Exam
  - CN: V and VII normal
  - Normal appearance of tympanic membrane

Case #2

- Tuning fork tests (512 Hz)
  - Weber: to the right
  - Rinne: Bone conduction > Air Conduction Bilaterally

Most Likely Diagnosis?

- Meniere’s disease
- Otosclerosis
- Otitis Media with Effusion
- Cholesteatoma
- Acoustic Neuroma
Diagnosis

- **Otosclerosis**
  - Disease of abnormal bone remodeling within the middle/inner ear
  - Most patients present with unilateral conductive hearing loss and normal TM examination
    - More severe cases may be bilateral with associated sensorineural hearing loss
  - Conductive loss due to fixation of the Stapes footplate within the Oval Window

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Otosclerosis

- Patients can have a family history of hearing loss
- In women, symptoms may worsen during pregnancy

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Otosclerosis

- **Treatment:**
  - Observation
  - Hearing Aid
  - Surgery (Stapedectomy):
    - Popularized by Dr. John Shea in 1952
    - Revolutionized treatment of otosclerosis
    - Stapes bone partially removed
    - Prosthesis inserted and linked to incus
Stapes Surgery

- Results
  - 90% with complete or near complete correction of conductive component of hearing loss
  - 9% with no change in hearing
  - 1% with complete sensorineural loss

Audiogram: Preop
Case #3

- 66 year-old male with sudden left ear fullness and tinnitus
- HPI
  - Sudden onset of left hearing change
  - Left ear feels full
  - Loud left buzzing sounds
  - Cannot hear or understand telephone on the left
  - Denies vertigo, ear infections, ear drainage
- PMH
  - Hyperlipidemia
  - Longstanding Atrial Fibrillation

Ear: Case # 3

Post-op Audiogram

Post-op Audiogram
Case #3

- Exam
  - Intact tympanic membranes without effusion
  - Cranial nerves VII, X, XI, XII intact
  - Weber lateralized to the RIGHT
  - Rinne: Air conduction > Bone conduction Bilaterally

Audiogram

Case #3: Sudden Hearing Loss

- Rapid onset over 3 days, affecting >3 frequencies by >30dB HL
- Sudden Sensorineural Hearing Loss
  - Symptom: aural fullness
  - Rule out conductive hearing loss
  - Cause identified in only 10-15%

Sudden SNHL Workup

- Routine audiogram
  - Rule out CHL (tuning fork, ear exam)
  - Confirm hearing loss
  - No role for routine lab testing
- Consider for fluctuating or bilateral SNHL:
  - ANA, RPR, Lyme titers, ESR, HIV, TSH
  - Evaluate for Retrocochlear Pathology
    - Sudden HL: 3-10% with CPA tumor on MRI
    - MRI with GAD IAC, brain, brainstem
    - ABR or serial audiometry
Natural History of Sudden SNHL

- Untreated patients with sudden SNHL
  - Recovery rates 31-65%
- Treated patients
  - Recovery 35-89%
- Why the wide range/discrepancies?
  - Inconsistent definition of sudden HL
  - Range of time frames for treatment
  - Range of hearing loss severities
  - Inconsistent definition of recovery

Prognosis

- Best prognosis with:
  - Milder hearing loss
  - Absence of vertigo
  - Improvement within 2 weeks of onset
  - Upsloping audiogram
  - Younger age

Treatment

- Reversible hearing loss
- Time sensitive
- Unknown etiology
- Evidence unclear
- Patient distress
  - = Shotgun therapy!

Treatment: Steroids

- AAOHNS Recommendations
  - Regarding steroids: “Even a small possibility of hearing improvement makes this a reasonable treatment to offer patients considering the profound impact on QOL a hearing improvement may offer.”
Oral Steroids
- Prednisone 1mg/kg/dose = max 60 mg/day
  - Full dose for 7-14 days, taper
  - Tapered over 2 weeks
- Methylprednisolone 48 mg
- Dexamethasone 10 mg

Intratympanic steroids
- Benefits
  - Increased drug concentration in perilymph and endolymph (Parnes et al. Laryngoscope 1999)
  - Reduced systemic effects
- Risks
  - Pain, transient vertigo, tympanic membrane perforation, otitis media

Audiogram

Case #3: Sudden SNHL
- REFER! Urgent Referral
- “Sudden Hearing Loss”
- Urgent Hearing Test and Evaluation
Case #4: Nose

- 44y/o man with nasal congestion and clear nasal drainage for 6 months
- HPI
  - “I Always have a cold”
  - Facial congestion/pressure
  - Occasional exacerbations with green/yellow drainage
  - Loss of smell
  - Allergy testing negative

Case #4

- PMH: asthma
- Meds: has tried mometasone spray, loratadine, pseudoephedrine, and multiple antibiotics without improvement
- Exam
  - Bilateral inferior turbinate enlargement
  - Clear nasal mucus
Case #4

- Diagnosis
- Possible Chronic Sinusitis
- Evaluation
- Nasal Endoscopy
- CT scan

Chronic Sinusitis

- CT Findings
Impact of Topical Nasal Steroid Therapy on Symptoms of Nasal Polyposis: A Meta-Analysis

Luko Badneh, MD, Rodney J. Schlosser, MD, Timothy L. Smith, MD, MPH, Zachary M. Sider, MD, MS:

- Structured literature review and meta-analysis
- Identified & analyzed 12 randomized, placebo-controlled trials
- Demonstrated statistically significant improvement in nasal symptoms
  - Extent of improvement not well-quantified
  - QOL impact unknown
- All steroid formulations demonstrated improvement

Laryngoscope 2012 Jul;122(7):1431-7

Intranasal Corticosteroid?

Oral corticosteroids in the management of adult chronic rhinosinusitis with and without nasal polyps: an evidence-based review with recommendations

Oral corticosteroids

<table>
<thead>
<tr>
<th>Corticosteroids</th>
<th>Oral dose duration</th>
<th>Oral dose duration</th>
<th>Oral dose duration</th>
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<tbody>
<tr>
<td>Prednisone</td>
<td>40 mg daily for 5 days</td>
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<td>40 mg daily for 5 days</td>
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<tr>
<td>Methylprednisolone</td>
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<td>40 mg daily for 5 days</td>
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<tr>
<td>Prednisolone</td>
<td>40 mg daily for 5 days</td>
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<td>40 mg daily for 5 days</td>
<td>40 mg daily for 5 days</td>
</tr>
</tbody>
</table>

Int Forum Allergy Rhinol. 2013 Feb;3(2):104-20

Oral Corticosteroids
Oral Corticosteroids

Nasal Polyp?

- WARNING
  - Unilateral
  - Epistaxis
  - Epiphora
  - Diplopia
  - Facial Numbness
Throat

Case #5 Obstructive Sleep Apnea

- 56 year-old male with daytime fatigue and sleep apnea
- HPI
  - Chronic daytime fatigue
  - Daily snoring and witnessed apnea
  - ESS: 21

Case #5: Sleep Study

- Polysomnogram
  - AHI 26.5
  - Supine AHI 50.3
  - Non-supine 25
  - RDI 30
  - CPAP prescribed
    - Could not tolerate, not using currently

Case #5

- Exam
  - Mild septal deviation
  - Modified Mallampati 3
  - Tonsils 2+
  - Moderate palate and uvula thickening
  - Increased tongue size
  - Mild retrognathia
Obstructive Sleep Apnea = OSA

- 9% US population: moderate-severe OSA (AHI>15)
- Untreated OSA -> Increased morbidity and mortality

OSA Treatment

- CPAP
- Weight Change
- Position
- No alcohol prior to sleep
- Oral appliances
- Surgery
  - Soft tissue
  - Bony
  - New Therapies

Level of Airway Obstruction

The Effects of Weight Loss

- BMI
  - BMI > 35 associated with worse outcomes after most surgical procedures
  - Tongue fat correlates with BMI (Nashi 2007)
  - 10% weight loss ~ up to 47% AHI drop (Johansson 2009)
  - 10% weight gain ~ 32% AHI increase (Peppard 2000)

<table>
<thead>
<tr>
<th>Category</th>
<th>BMI</th>
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<tbody>
<tr>
<td>Very Obese</td>
<td>&gt;35</td>
</tr>
<tr>
<td>Obese I</td>
<td>30 - &lt;35</td>
</tr>
<tr>
<td>Overweight</td>
<td>25 - &lt;30</td>
</tr>
<tr>
<td>Normal</td>
<td>18.5 - &lt;25</td>
</tr>
</tbody>
</table>

Oral appliances

- Devices
- Anatomy
- Advantages
  - Nonsurgical; Well-tolerated
- Disadvantages
  - TMJ pain
  - Tooth pain and alignment changes
  - Gum irritation and dry mouth

Drug-Induced Sleep Endoscopy (DISE)

- Described in 1991 by Pringle and Croft.
- 3D dynamic assessment of the airway during sedation
- Evaluation of vibration/obstruction severity and location
- Goals:
  - Understand airway phenotypes
  - Direct surgical treatments

Drug Induced Sleep Endoscopy Videos

Surgery for OSA

- Palate and Oropharynx
  - Tonsillectomy
  - Modified Uvulopalatopharyngoplasty
- Tongue
  - Lingual tonsillectomy
  - Tongue reduction procedures
  - Genioglossus Advancement
- Epiglottis
  - Hyoid suspension
  - Epiglotectomy
Goals of Treatment

- Reduce symptoms: daytime fatigue
- Improve quality of life
- Minimize risk: mortality, cardiac, motor vehicle accidents

New Treatment: Inspire Hypoglossal Nerve Implant

- FDA 4/2014
- Breathing sensor
- Stimulator to nerve
- Fully implanted
- Sleep remote

Inspire Therapy

- Stimulation to the hypoglossal nerve improves muscle tone during sleep to reduce obstruction.

Clinical Evidence

- STAR Trial: Strollo et al. NEJM 2014.
- 126 patients with mod-severe OSA
- 12-months post implant
- Reduced:
  - AHI (29.3 to 9)
  - ODI (25.4 to 7.4)
  - ESS survey
  - FOSQ survey
  - Daily use: 86%

Strollo et al. NEJM 2014; Strollo et al. Sleep 2015; Woodson et al. OtoHNS 2015.
Hypoglossal Nerve Implant

- Offers a new option for CPAP intolerant patients
- Improved AHI, sleep symptoms
- Titrated solution
- Reduced postoperative pain and medication use
- Reduced postoperative hospital stay
- Improved potential surgical candidacy

OSA: New Therapies

- Inspire Hypoglossal Nerve Implant – UCSF Regional Center
- MAGNAP: Clinical Trial

Lingual tonsillectomy and partial glossectomy

- Transoral Robotic Surgery

Case #7

Throat Pain & Hoarseness
Case #7: Throat Pain and Hoarseness

- 54y/o man with worsening hoarseness over the past 6 months
- HPI
  - Mild intermittent throat pain
  - Globus sensation when swallowing, but no dysphagia
  - 25 pack/year smoking history, drinks 6-pack of beer/night

Case #7

- PMH: HTN
- Meds: atenolol, ASA, occasional pepcid
- Exam
  - Oral cavity WNL
  - No nasal abnormalities
  - No cervical adenopathy
  - Halitosis

Laryngoscopy
Case #9

- Laryngeal Mass, R/O Cancer
- Direct Laryngoscopy, Biopsy
  - Path -> Squamous Cell Carcinoma

Laryngeal Cancer

- Tobacco and EtOH are primary risk factors
- 4:1 male to female ratio
- Clinical Presentation often depends on site of origin

Laryngeal Cancer

- Glottis
  - Earlier presentation (voice change)
  - Decreased risk of cervical metastasis
- Supraglottis
  - Later presentation
  - Increased risk of cervical metastasis

Laryngeal Cancer

- Treatment
  - Surgery, Radiation, and Chemotherapy are three treatment modalities
  - Stage of cancer and local expertise determines treatment approach
  - Overall trend towards increased use of radiation/chemotherapy and “laryngeal conservation” surgery