Common Ear Disorders and their pharmacologic management

Objectives
- Identify the medication therapies used to treat cerumen impaction and eardrum perforation
- Describe the practice guidelines for the management of acute otitis externa (AOE)
- Discuss the management of acute otitis media (AOM) based on the 2013 AAP/AAFP guideline

Factors contributing to wax impaction
- Use of cotton swabs (or other objects)
- Radiation to head/neck
- Lack of mandibular movement
- Hearing aids
- Ear bud use
- Genetics

Wax Impaction Management
- Carbamide peroxide solution 1-5 drops twice daily x 4 days (5-10 drops-adult)
- ½ strength hydrogen peroxide 5 drops twice daily x 4 days
- Pump the tragus!
- Keep ear up for several minutes, use cotton ball to absorb drainage
- Gentle warm water irrigation
- Binocular microscopy with cerumen removal by ENT MD
- Wax currette
- Suction
Eardrum perforations

Ear Pain: true ear disorder or referred?
- Teething (cranial nerve V)
  - Emerging teeth, impacted molars in teen
  - Abscess
- TMJ pain (malocclusion)
- Preauricular cervical adenitis
- Parotitis, sinusitis
- Anterior tongue lesions, ulcers
- Posterior tongue, pharyngeal or laryngeal inflammation (post op T/A)
- Bell's palsy or Ramsey Hunt (Herpes Zoster)
- C1-C2 injuries

Acute External Otitis
- "Swimmer's Ear"
- Most common presentation - itching, pain when ear is touched, edema of ear canal
- May have drainage, fever, enlarged lymph nodes
- Contributing factors:
  - Absence of cerumen
  - Water retention
  - Trauma to skin of canal
  - Change in skin pH
- Primary cause is bacterial

Acute Otitis Externa - AAO- HNS 2014 Guideline
- Distinguish diffuse AOE from other causes of otalgia, otorrhea, and canal inflammation
- Assess for factors that would modify management
- Assess and treat pain
- No systemic antimicrobials unless there is extension outside canal or host factors that indicate need

Otitis Externa - Differential diagnosis
- Contact Dermatitis
- Herpes Zoster Oticus
- Furunculosis
- Eczema

Acute Otitis Externa - AAO- HNS 2014 Guideline
- Clinicians should use topical preparations for diffuse, uncomplicated AOE
- Clinician should inform patients how to administer topical drops. Debridement or wick may be needed.
- Non-oto-toxic topical preparation should be used for known or suspected perforation
- Reassess if failure to respond in 48-72 hrs
External Otitis- treatment

- Pain management: ibuprofen
- Debridement is important
- Prescribe an antibiotic ear drop (w or w/o corticosteroid) containing a mild acid
- May need ear wick for 1-2 days
- Apply drops 4 times daily; treat 3-4 days beyond symptomatic improvement (usually for 5-7 days total)
- Must keep water out of ears!
- If severe- may require oral or IV antibiotics plus topical drops

External Otitis- treatment

- 2% acetic acid w/wo hydrocortisone
  - (VoSol, Acetasol, VoSol HC)
- Polymyxin B-hydrocortisone
  - (Corticosporin otic)
- 0.3% Ciprofloxacin w hydrocortisone
  - (Ciprodex)

External Otitis- treatment

- Ofloxacin 0.3%
- Aminoglycoside w/wo hydrocortisone
  - (Tobramycin, Garamycin, Tobradex)
- For fungal: Clotrimazole (Lotramin)

Key teaching points for topical ear drops

- Warm the drops
- Clean the ear of debris- cotton ball
- Gently pull ear back to straighten canal
- Do not touch dropper to ear
- Pump the tragus after instilling drops
- Keep ear up for several minutes

Keep Ears dry- “Dry Ear Precautions”

- External otitis
- Draining ear
- Major ear surgery in previous 2 weeks
- For frequent swimmers with healthy ears- may use 50:50 mixture of white vinegar and isopropyl alcohol. Place 4-5 drops in canal after swimming

Acute Otitis Media (AOM)

- Purulent secretions distending TM
- Bullous Myringitis
AOM mild symptoms
- Fever less than 102.2 F (39 C)
- Mild otalgia less than 48 hours

AOM moderate-severe symptoms
- Moderate or severe ear pain
- Ear pain lasting > 48 hours
- Fever > 102.2 F / 39 C
- Otorrhea

AOM management - 2013 AAP guideline changes
- Change in diagnostic criteria
- Option of “watchful waiting” added for 6mos-2yrs with mild AOM
- Revision of recommendations regarding therapy for patient with penicillin allergy
- Change in duration of therapy based on age and severity
- Discussion of recurrent AOM management

AOM pain management
- Acetaminophen or ibuprofen for pain/fever
- Warm compresses may provide comfort
- May use topical anesthetic (antipyrine and benzocaine) if no perforation or drainage (Auralgan, Aurodex) 4-5 gtt every 2-3 hours
- Antihistamines and decongestants are NOT effective

AOM management - AAP guidelines
- Do not wait! Give antibiotic for:
  - < 6 mo child with unilateral or bilateral AOM with severe symptoms
  - 6m-2yo child with relapse of AOM within the past 30 days
  - Child with 2 concurrent illnesses (AOM with strept throat or sinusitis)
  - Child with weak immune system, cleft palate, or head & neck syndrome
AOM Antibiotic therapy: First line

- **#1- Amoxicillin** 80-90 mg/kg/day in 2 divided doses (BID dosing)
- Child must not have received Amoxicillin in the past 30 days
- Child must not have concurrent conjunctivitis, sinusitis
- No penicillin allergy
- Length of treatment:
  - 10 days if < 6 years
  - 5-7 days for mild to mod. illness > 6 yrs

AOM Antibiotic therapy: Beta lactamase coverage

- If amoxicillin was used in past 30 days
- If there is concurrent conjunctivitis
- If there is a history of recurrent AOM unresponsive to Amoxicillin
- Then use **Augmentin** - 90 mg/kg per day amoxicillin component, 6.4 mg/kg per day of clavulanate in 2 divided doses.

AOM treatment: Amoxicillin allergy, not type 1

- Cefdinir 14 mg/kg/day in 1 or 2 divided doses (tastes good)
- Cefpodoxime 10 mg/kg/day, once daily
- Cefuroxime 30 mg/kg/day in 2 divided doses
- Length of treatment:
  - 10 days if < 6 years
  - 5-7 days for mild-mod. illness > 6 yrs

AOM treatment: Penicillin allergy- type 1 (urticaria, wheezing, anaphylaxis)

- Azithromycin- 10 mg/kg/day/day 1, then 5 mg/kg/day for 4 days, once daily dose
- Clarithromycin- 15 mg/kg/day in 2 divided doses. Length of treatment:
  - 10 days if < 6 years
  - 5-7 days for mild to mod. illness > 6 yrs

If an oral antibiotic is not an option..

- Child is vomiting or won't swallow meds
- Ceftriaxone 50 mg/kg/day IM for 3 days

Progression of AAP Recommended Antibacterial Agents
AOM and MRSA

- Need Culture & sensitivity!
- If no ear tubes - give oral antibiotic
  - Trimethoprim- sulfamethoxazole 8-12 mg TMP (40-50 mg SMX)/kg/day in 2 divided doses for 7-10 days
  - Clindamycin 10-30 mg/kg/day in 3-4 divided doses
- Ear tubes present - use topical drops
  - sulfacetamide 10% ophthalmic solution 5 drops twice daily (Bleph 10)
  - Sulfacetamide and prednisolone (Vasocodin, Blephamide)

Recurrent AOM recommendations

- 3 episodes in 6 months or 4 episodes in 1 year with 1 episode in the preceding month
- Tympanostomy tubes may be offered for recurrent AOM

Ear tubes present - use topical drops
- sulfacetamide 10% ophthalmic solution 5 drops twice daily (Bleph 10)
- Sulfacetamide and prednisolone (Vasocodin, Blephamide)

AOM management with ear tubes

- (Floxin) Ofloxacin (0.3%) otic solution 5 drops twice daily for 10 days
- (Ciprodex) Ciprofloxacin (0.3%) with dexamethasone (0.1%) 5 drops twice daily for 7 days
  - Use if ofloxacin fails to clear drainage by day 7
  - If there is documented granulation tissue
  - Most insurance co. require prior-auth

References

- The Diagnosis and Management of Acute Otitis media. 2013. downloaded from http://pediatrics.aappublications.org/content/131/3/e964.full.html