BEAUTY IS IN THE EAR OF THE BEHOLDER

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OTITIS MEDIA

- Incidence
- Risk Factors
- Signs and Symptoms
- Exam
- Treatment
- Home Care
- Outcomes
- Complications
ACUTE OTITIS MEDIA

- AAP Definition (Pediatrics 2013, Feb)
  - 1. acute onset of symptoms
  - 2. presence of middle ear effusion (MEE)
  - 3. signs of acute middle ear inflammation

INCIDENCE

- 60% of children will have at least 1 ear infection by age 3
- 30% will have more than 1 ear infection by age 1
- Acute otitis media is most common diagnosis during pediatrician visits other than for well-child reasons

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PHYSICAL PREDISPOSITIONS

- Eustachian tubes are short, wide, straight and horizontal
- Cartilaginous lining is underdeveloped
- Temporal bone flare may distort tube
- Cervico-cranial myospasm may alter cervical biomechanics

RISK FACTORS
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- Older siblings
- Daycare
- Family history
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- Pacifier use
- Second hand smoke

RISK FACTORS
- Older siblings
- Daycare
- Family history
- Pacifier use
- Second hand smoke
- Allergy
- Low socioeconomic status
SIGNS AND SYMPTOMS

COMMON SIGNS AND SYMPTOMS

- Tugging ears
- Pulling ears
- Holding ears

COMMON SIGNS AND SYMPTOMS

- Irritability
- Excessive crying
COMMON SIGNS AND SYMPTOMS

- Changes in behavior pattern

COMMON SIGNS AND SYMPTOMS

- Change in appetite

COMMON SIGNS AND SYMPTOMS

- Disturbed sleep
COMMON SIGNS AND SYMPTOMS
• +/- fever

DDX TEETHING
• Drooling
• Fingers in mouth
• Inflamed gums
• Red cheeks
• Appetite change
• Loose stools

DDX TOPICAL IRRITATION
• Excessive cerumen
• Soap residue
DDX URI
- Runny nose
- Puffy eyes
- Sneezing
- Coughing

DDX REFERRED PAIN
- SCM
- TMJ
- Teeth
- Upper cervicals
EXAMINATION

- Color
- Contour
  - Shape and position of light reflex
  - Clarity of ossicles
  - Bulge
- Translucency
- Fluid lines
EXAMINATION

- Color of tympanic membrane
  - Grey

EXAMINATION

- Color of tympanic membrane
  - White
    - otosclerosis

EXAMINATION

- Color of tympanic membrane
  - White
    - cholesteatoma
EXAMINATION

- Color of tympanic membrane
  - White
  - Purulence

EXAMINATION

- Color of tympanic membrane
  - Yellow
  - Amber

EXAMINATION

- Color of tympanic membrane
  - Pink
  - Red
EXAMINATION
- Contour of the tympanic membrane
- Shape and position of light reflex
  - cone in anterior/inferior quadrant is normal
  - loss of cone shape
  - change in position

EXAMINATION
- Contour of the tympanic membrane
- Clarity of ossicles
  - malleus
    - normally easily visible
    - protrudes with retraction

EXAMINATION
- Contour of the tympanic membrane
- Clarity of ossicles
  - obliterated with bulge
EXAMINATION

- Assessment of contour

  - A. Normal
  - B. Mild bulge
  - C. Moderate bulge
  - D. Severe bulge

EXAMINATION

- Integrity of tympanic membrane
Medical
- Watchful waiting: Considered when AOM is questionable, there is no pain, the signs are unilateral and/or the child is older than 2

TREATMENT
- Antibiotics
  - Under age 2 antibiotics are most appropriate.
  - After age 2 antibiotics with diagnostic certainty
TREATMENT CONSIDERATIONS

- 80+% of all ear infections improve with no treatment at all
- Use of Amoxicillin for treatment of the first episode of ear infection results in an increased likelihood of recurrence
- Use of antibiotics in general is associated with healing of the ear infection 1 day sooner than no pharmaceutical treatment at all.
- Overuse of antibiotics has resulted in spontaneous development of antibiotic resistant strains of organisms

TREATMENT

- Medical
  - Tubes
    - Single episode lasting 3+ months
    - 6 episodes in 1 year
    - 6 months symptomatic over 24 months

TREATMENT OPTIONS

- Chiropractic adjustment—is there evidence?
  - Low level research: case series/studies
TREATMENT OPTIONS

- Chiropractic adjustment
  - most common C0-C4

TREATMENT OPTIONS

- nutritional considerations
  - Vit A (2000-5000 IUs/day)
  - Vit C (to gut tolerance)
  - Zinc (5-15mg/day)
  - Omega 3 Fatty acid supplement
    - Coromega
    - EPA/DHA Junior
    - Krill oil
    - Cod liver oil
  - Probiotics

TREATMENT OPTIONS

- Cranial techniques
Sinus/lymphatic massage

- Stroke gently from superior to inferior along the anterior and posterior SCM.

Oral sweep

- Stroke gently at the junction of the hard and soft palate.
- This contracts the tensor veli palatini muscle which aids eustachian tube opening.
- The TVP is innervated by CN V: mandibular branch, which also serves muscles of mastication.
TREATMENTS

- Homeopathic remedies
- Acupuncture

HOME CARE

- Ear drops
  - Garlic and Mullein
HOME CARE

- Essential Oils
  - Calendula
  - Lemon
  - Rosemary
  - Lavendar

HOME CARE

- Lymphatic stripping
- Oral sweep

HOME CARE

- Heat application
HOME CARE

- Inclined sleep position

HOME CARE

- Discontinue pacifier use and bottle propping
- Eliminate dairy
  - 75% persistent OM cases show improvement
  - Substitution of Ca+/A/D fortified almond/coconut milk or add Calcium supplement

OUTCOME ASSESSMENT
**SYMPTOM IMPROVEMENT**

- Reduced/eliminated pain
- Improved/normal disposition
- Improved/normal sleep
- Afebrile
- Improved/normal appetite
- Improved/normal play behavior

**OTOSCOPIC EXAM FINDINGS**

- Reduced grade of bulge

1. **Normal**
2. **Erythema only**
3. **Erythema + fluid**
4. **Erythema + effusion**

Possible Acute Otitis Media

- High confidence - Acute Otitis Media

- 5 = complete effusion
- 6 = drum bulge
- 7 = bulla

**COMPLICATIONS**
Mastoiditis
- **Sx**
  - Dull ache and tenderness at mastoid
  - Low grade fever
  - Ear flaring
- **Tx**
  - Antibiotics (4,831 cases of OM treated with abx to prevent 1 case of mastoiditis)
  - Surgical draining of the mastoid
  - Surgical removal of damaged bone (mastoidectomy)

Meningitis

Adenoidal tonsillar hypertrophy
- **Sx**
  - Persistent mouth breather
  - Snoring
  - Apnea
  - Chronic OM
  - May be assoc with behavioral disorders
  - Autism
  - ADHD
  - LD
  - EBD
COMPLICATIONS

Adenoidal Tonsillar Hypertrophy-Treatment

* Conservative
  - Adjust
  - Lymphatic massage
  - Vit C
  - Remove allergens/irritants
  - complications/indications for medical referral
  - Cyanosis
  - Apnea

* Medical
  - Tonsillectomy
  - adenoidectomy

REFERENCES

* Owen MD et al, Relation of infant feeding practices, cigarette smoke exposure, and group child care to the onset and duration of otitis media with effusion in the first two years of life, JAMA 1993 Nov 123; 5 : 702-711
* AAP, Clinical Practice Guidelines: The Diagnosis and Management of Acute Otitis Media, Pediatrics 2013;131:e664-e699
* Gottlieb A, Rupert R, Chiropractic manipulation in pediatric health conditions – an updated systematic review, Chiropractic and Osteopathy 2008 16:11
* ICPA4Kids.com: Pediatric chiropractic resources and research citations.

RESOURCES

* [http://www.utmb.edu/pedi_ed/aom-otitis/Practice/exercises.htm](http://www.utmb.edu/pedi_ed/aom-otitis/Practice/exercises.htm)