THE GOOD, THE BAD, AND THE UGLY OF EAR DISEASE
Session A 2148

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In the past 12 months, I have not had a significant financial interest or other relationship with the manufacturer(s) of the product(s) or provider(s) of the service(s) that will be discussed in my presentation.
This presentation will not include discussion of pharmaceuticals that have not been approved by the FDA.

I will most likely discuss “off-label” use of pharmaceuticals.

(We usually do in otology.)
Commit 100% to use of pneumatic bulb for otoscopy in office
Learn to distinguish perforation from retraction
Learn to distinguish myringosclerosis from keratoma
Learn how to diagnose congenital keratoma
Learn management of common and uncommon ear problems.
Identifier appropriate time for referral.
When should you refer to the office and when to the emergency department?
Q1: WHAT IS THE MOST IMPORTANT TOOL FOR MIDDLE EAR PHYSICAL DIAGNOSIS?

- A) Otoscope
- B) Tympanogram
- C) Pneumatic bulb with otoscope
- D) CT scan
A1: MOST IMPORTANT TOOL FOR MIDDLE EAR PHYSICAL DIAGNOSIS

C) Pneumatic bulb with otoscope
OTOLOGY MANTRAS

- Is it clean?
- Is it dry?
- Is the hearing acceptable?
WHY INSERT TUBES?

- Decrease number of AOM episodes
- Persistent ME fluid (> 3 mo) with conductive hearing loss (CHL)
- Worsening retraction with CHL
- Acute mastoiditis
- AOM with facial nerve weakness
TYPES OF TUBES

- Metal, Plastic, Titanium, Bone
- Short – term = 3 to 6 months
- Standard = 8 to 12 months
- Longer – term = 2 years
- Very – long term = ?
FLUOROPLASTIC TUBES

- May be soft or hard
- Many types
- Short and long term
TYMPANOSTOMY TUBE PROBLEMS
METAL TUBES

- Plug easily
- Fallen out of favor
V - VENT TUBE

- Long – term tube
- Long narrow shaft plugs easily
- High retention rate
- High perforation rate
Q2: WHAT IS THE PREFERRED INITIAL TREATMENT FOR TUBE OTORRHEA?

- A) Oral antibiotic alone
- B) Antibiotic ear drops alone
- C) IV antibiotics alone
- D) Oral antibiotic and antibiotic ear drops
A2: PREFERRED INITIAL TREATMENT FOR OTORRHEA

B) Antibiotic ear drops alone
Antibiotic drop (fluoroquinolone - NO ototoxicity)

If not dry by 1 week, add oral antibiotic +/- culture
TUBE OTORRHEA

- ofloxacin otic solution (0.3%) :
  - FDA approval > 1 yo
  - 4 - 5 drops 2 x / day for 7 - 10 days

- ciprofloxacin (0.3%) / dexamethasone (0.1%)
  - FDA approval > 6 mo
  - 4 – 5 drops 2 x / day for 7 – 10 days
Draining ears rarely develop surgical mastoiditis.

No need for urgent CT scan.
( Remember that what is present in the middle ear is probably also in the mastoid )

Warning signs:
- Facial nerve weakness
- Acute vertigo
- Redness and swelling over mastoid
OTORRHEA WITH GRANULATION TISSUE (GT)

- Develops more often after 2 years
- May bleed
- Drops: antibiotic + steroid
- May require tube removal if GT not controlled
WHEN REFER FOR OTORRHEA?

- 3 weeks of unremitting drainage despite drops and oral antibiotic
- Culture + for MRSA or MR *Strep pneumo*
- Infectious disease consult
- Tip: unremitting itchy, white drainage with no pain -> FUNGAL
FUNGAL OTORRHEA

- Topical antifungal drops very effective: (off label use)

- clotrimazole 1% solution - 5 drops 3x a day for 7 days
WHEN REFER OTORRHEA OR AOM TO EMERGENCY DEPARTMENT?

- Redness and swelling over mastoid
- Facial nerve weakness
- Acute vertigo

- [Needs CT scan + contrast]
PERFORATIONS v. RETRACTIONS
Q3: WHICH CAUSES MORE LONG-TERM COMPLICATIONS?

- A) Eardrum perforations
- B) Eardrum retractions
A3: WHICH CAUSES MORE LONG-TERM COMPLICATIONS

B) Eardrum retractions
PERFORATIONS

- If small (residual hole from tube), usually causes little to no conductive hearing loss
- NO hurry to close hole
- Monitor every 6 months
- May close by 7 y.o. if other side OK (except cleft palate population)
TRAUMATIC PERFORATIONS
Q4: WHAT PERCENTAGE OF TRAUMATIC PERFORATIONS HEAL COMPLETELY?

- A) 10%
- B) 50%
- C) 70%
- D) 90%
A4: PERCENTAGE OF TRAUMATIC EARDRUM PERFORATIONS THAT HEAL COMPLETELY

D) 90 %
Facial nerve paralysis?
Vertigo?
Complete loss of hearing?

If yes, immediate referral
If no, antibiotic ear drops for 1 week and refer to be seen 3–4 weeks + audio
HEMOTYMPANUM
RETRACTIONS

- More concerning than perforations:
  - may evolve with ossicle erosion
  - may become “unsafe”
- Monitor every 6 mo for a few years
- Baseline hearing test
Is it clean?
Is it dry?
Is the hearing acceptable?
Q5: HOW CAN YOU DISTINGUISH RETRACTION FROM PERFORATION?

- A) Pneumatic otoscopy
- B) Tympanogram
- C) CT scan
- D) Both A and B
A5: DISTINGUISH RETRACTION FROM PERFORATION

- D) Both A and B
No debris

If good hearing, can only make WORSE with an operation
SEVERE FOCAL (not global) RETRACTIONS

- Have child blow with nose and mouth closed (Valsalva) to see if “crinkles”
- May develop into keratomas
- What turns a “safe” retraction into an “unsafe” retraction pocket?
MYRINGOSCLEROSIS v. KERATOMA (CHOLESTEATOMA)
MYRINGOSCLEROSIS

- Chalky – white irregular deposits within substance of eardrum
- From:
  1. Middle ear infections
  2. Tympanostomy tubes
- The sclerotic plaque moves with the eardrum
MYRINGOSCLEROSIS
WHAT IS CHOLESTEATOMA?

- A misnomer = **Keratoma** (skin–lined cyst)
- May be present since birth and grow slowly
  - **Congenital**
- or, may be **Acquired** from:
  1. Deposition of skin through a previous infection with perforation and spontaneous closure
  2. Debris forming in a severe retraction pocket
CONGENITAL KERATOMA

- Try to recognize early (< 3 y.o.)
- Smooth, spherical pearl behind drum (epidermoid formation)
- Recurrence common if not completely removed
- “2 ball“ effect
CONGENITAL KERATOMA
Q6: UNILATERAL CONGENITAL KERATOMA IN A 5 Y.O. MOST COMMONLY PRESENTS AS:

- A) Chronic drainage
- B) Unilateral hearing loss
- C) Facial nerve weakness
- D) Acute mastoiditis
A6: UNILATERAL CONGENITAL KERATOMA PRESENTATION IN 5 Y.O.

B) Unilateral hearing loss
Beware the unilateral middle ear effusion / infection in $\geq 5$ y.o. child unresponsive to antibiotics !!!

This is a congenital middle ear keratoma until proven otherwise

Common malpractice claim of delayed diagnosis
ACQUIRED KERATOMA

- From retraction pocket
- Implantation of skin after perforation
- Implantation of skin after ear surgery
WHEN DOES FLUID IN THE MASTOID EQUAL MASTOIDITIS?
Q7: WHEN DOES FLUID IN THE MASTOID = MASTOIDITIS?

- A) External ear is red and swollen
- B) CT scan shows fluid in mastoid
- C) Crease behind ear is swollen & red and ear is proptotic
- D) Ear pain
A7: FLUID IN THE MASTOID = MASTOIDITIS

C) Crease behind ear is swollen & red and ear is proptotic
Mastoid air system is continuous with ME space via the attic of middle ear.

By definition AOM has fluid in the mastoid radiographically.

Continuum of disease severity from an uncomplicated AOM to AM with intracranial complication.
1 1/2 yo with ear pain, crying, ear hurts when pulled
No redness or swelling behind ear over mastoid, but has pain when pushed
CT scan ordered to “r/o mastoiditis“
AOM or AM ????
CLINICAL FEATURES OF MASTOIDITIS

- **Attic blockade**:  
  - Purulence in mastoid leads to venous congestion  
  - Diffuse erythema and edema over mastoid  
  - Ear protrusion out and down
Acute mastoiditis is a CLINICAL diagnosis, not a radiographic diagnosis
ACUTE MASTOIDITIS
COALESCENT MASTOIDITIS WITH CORTICAL BREAKDOWN
ACUTE MASTOIDITIS WITH EXTENSION
MICROBIOLOGY OF MASTOIDITIS

- In past decade, rise in virulent *S. pneumoniae* mastoiditis despite PCV 7

- Also rise in *S. aureus* and *S. pyogenes*
TREATMENT: DEPENDS ON STAGE AT PRESENTATION

- IV antibiotics
- Surgery:
  - Myringotomy + tube
  - Mastoidectomy
  - Drainage of subperiosteal abscess
  - Drainage of epidural abscess
  - Drainage of sigmoid sinus thrombosis
Summary

- Timely ORL consultation helpful
- CT scan WITH CONTRAST helpful in distinguishing between early swelling v. external / internal abscess
WHEN DOES FLUID IN THE MASTOID EQUAL MASTOIDITIS?

It depends on the clinical scenario.
Commit to using the pneumatic bulb
Practice using the pneumatic bulb to distinguish perforation from retraction
Practice using the pneumatic bulb to distinguish myringosclerosis from keratoma
Look near short process of malleus: Do you see 1 or 2 balls?
THE BAD
THE UGLY
CHECK OUT THIS WEBSITE !!!

http://www.entusa.com/eardrum_and_middle_ear.htm