430 Teams

Diseases of the Ear, Nose and Throat

15sth Lecture:

Ear II

Done by: Shahad Almohanna

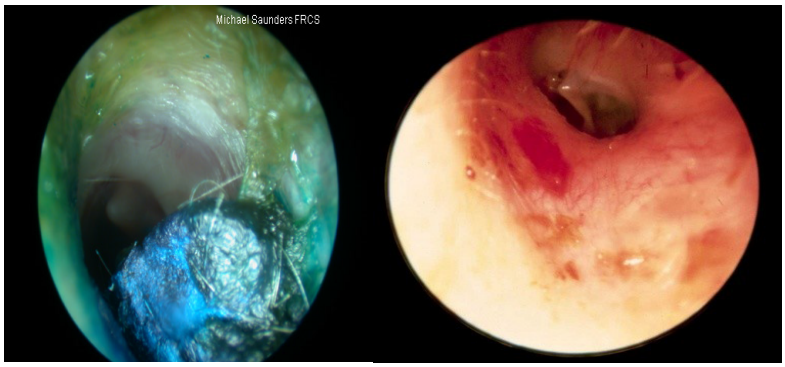
Revised by: Hadeel S. Al-Madany

The slides were provided by doctor (Dr. Abdulrahman Hagr Al-Ghamdi)
Important Notes in red
Copied slides in black
Your notes in green/ blue

Disease of external ear

Wax: (Cerumen Impaction)

Definition:
Accumulation of the secretion of sebaceous and cermunous glands situated in the outer cartilaginous part of external canal.
Normally, the glands secrete a little amount of wax and migrate by movement of jaw.
It's the commonest cause of conductive hearing loss caused by excessive use of Q-tips.
The ear is the only organ that cleans itself.
Symptoms:
1. Deafness, which is Sudden. (Conductive Hearing Loss)
2. Earache.
3. Pain
4. Tinnitus
Treatment:
Removal of the accumulated wax by suction.



Foreign body:

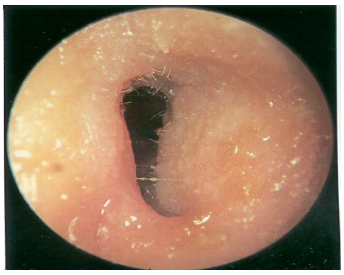
Classical history going out to camp woke up with painful ears.

Painful ears from an insect treated with Jonson oil because it will drown the insect till it dies.

Tumors:
Benign: Exostosis, Osteoma (periosteal tumors)
Malignant: Rare, Metastasis

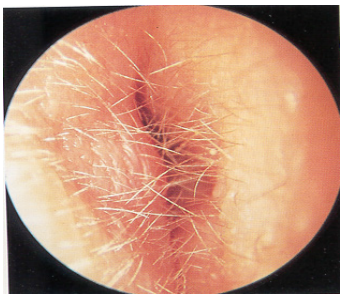
Infection (otitis externa):

Clinical Course:
Itching is the classical finding, progresses to: pain, decreased hearing, discharge (usually from bacterial infection)



AOE: Mild to Moderate Stage
• Symptoms: pain, increased pruritus.
• Signs: Erythema, increasing edema, canal debris, discharge

AOE: Severe Stage
• Symptoms: severe pain, worse with ear movement, chewing.
• Signs: lumen obliteration, purulent otorrhea, and involvement of periauricular soft tissue.



Otorrhea: little scanty, watery or purulent discharge.

Microbiology: skin organisms most common

• Bacteria 50% of cases
  - Staph aureus
  - Pseudomonas
  - Proteus
• Fungi
  - Aspergillus – tropical
  - Candida albicans – temperate

Epidemiology:
•Warm, humid climate
  - Swimmer's ear (wax is removed from the increase amount of chloride or shampoo)
• Poor hygiene (removing wax with a pen)
• Closed canal
  - Hearing aid (headphones)
  - Turbans in India
• Composition of cerumen
  - pH changes from acid to alkaline (D.M)
  - Softer – washed out
  - Hard block the canal
• Instrumentation of ear canal (non expert examination or cleaning which lead to injury)

Diagnosis:
•Persistent disease could be:
  - Resistant
  - Fungal
  - Dermatological etiologies (always ask history and examine carefully)

Cultures will be helpful to identify the cause.

Treatment:

- meticulous cleaning every 2-3 days then weekly
- Topical antibiotic
- Water precautions

Furunculosis:

- Acute localized infection
- Lateral 1/3 of posterosuperior canal
- Obstructed apopilosebaceous unit (hair follicle unit)
- Pathogen: S. aureus

Symptoms:

- Localized pain
- Pruritus
- Hearing loss (if lesion occludes canal)

Signs:

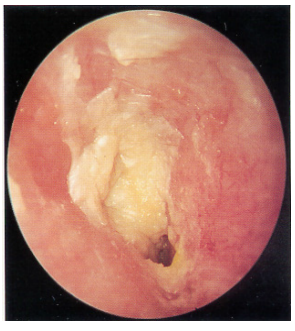
- Edema
- Erythema
- Tenderness
- Occasional fluctuance

Treatment:

- Local heat
- Analgesics
- Oral anti-staphylococcal antibiotics
- Incision and drainage reserved for localized abscess
- IV antibiotics for soft tissue extension

Otomycosis: (oto = ear mycosis = fungal)

- Fungal infection of outer ear canal skin
- Primary or secondary (AB) (secondary due to middle ear infection with fluid; fluids that go to outer ear makes it wet and this will lead to fungus accumulation so the key is to make the ear dry)
- Most common organisms: Aspergillus and Candida

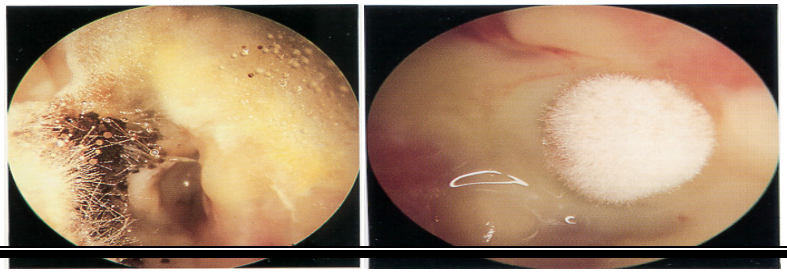


Symptoms:

- Often indistinguishable from bacterial OE
- Pruritus deep within the ear
- Dull pain
- Hearing loss (obstructive)
- Tinnitus

Physical Exam:

- Early
  - –Normal
  - – Canal erythema
  - – Mild edema
- Later
  - – "Wet newspaper"
  - – Red, tender skin
  - –Fungal hyphae



Otomycosis Fungal hyphae:

Treatment:

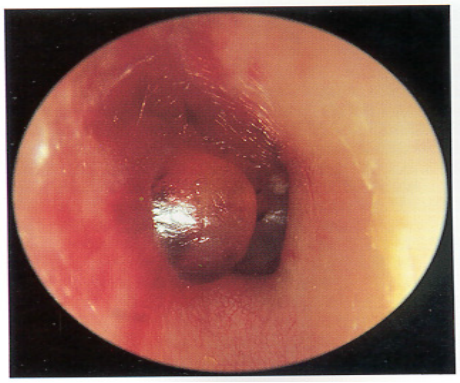
- Thorough cleaning
- Drying of canal
- Topical antifungals

Bullous Myringitis:

- Viral infection
- Bacteria of OM
- Confined to tympanic membrane
- Children

Symptoms:

- Sudden onset of severe pain
- No fever
- No hearing impairment
- Bloody otorrhea (significant) if rupture



Signs:

- Inflammation limited to TM & nearby canal
- Multiple reddened, inflamed blebs
- Hemorrhagic vesicles

Treatment:

- Self-limiting
- Analgesics
- Topical antibiotics to prevent secondary infection
- Incision of blebs is unnecessary

Necrotizing External Otitis (NEO)

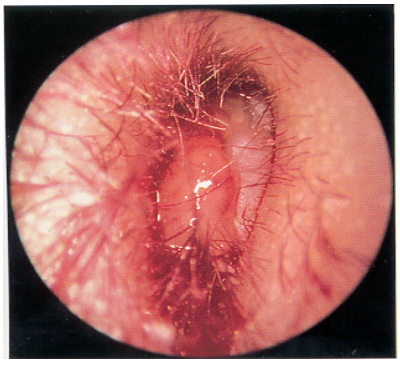
- Potentially lethal infection
- More in DM and immunocompromised patients
- Pseudomonas aeruginosa

Called also Malignant Otitis Externa

4 Ds

- Diabetes mellitus
- Discharge (Purulent)
- Discomfort
- Dysfunction Cranial nerve

Granulation obscured TM >>>



Imaging:

- Plain films
- Computerized tomography – most used

- Technetium-99 – reveals osteomyelitis
- Gallium scan – useful for evaluating Rx
- Magnetic Resonance Imaging

Treatment:

- Antibiotics: Intravenous at least 4 weeks.
- Local canal debridement
- DM control
- Pain control
- Hyperbaric oxygen experimental
- Serial gallium scans monthly

Mortality:

- 25 % Death rate
- 60% with multiple cranial neuropathies
- 25 % Recurrence
- May recur up to 12 months after treatment

Herpes Zoster Oticus:

- J. Ramsay Hunt
- Varicella zoster
- Shingles: Infection along one or more cranial nerve dermatomes (with facial nerve distribution)

Ramsey Hunt syndrome:

– Herpes zoster of the pinna
– Otalgia
– Facial paralysis

Symptoms:

Early: burning pain in one ear, headache, malaise and fever
Late (3 to 7 days): vesicles, facial paralysis

Treatment:

- corneal protection most important.
- Oral steroid then taper it (10 to 14 days)
- Antivirals

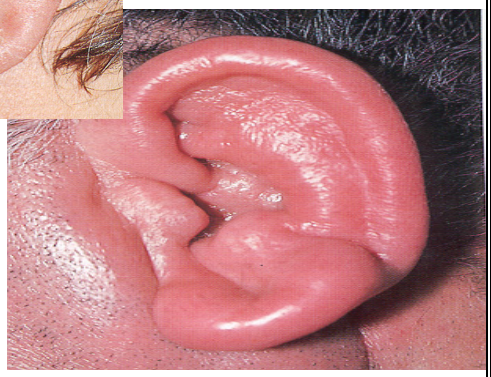
Perichondritis: infection of auricle cartilage

Signs:

- Tender auricle
- Induration
- Edema

Advanced cases:

– Crusting
– Involvement of soft tissues



Erysipelas:

Acute superficial cellulitis

- Group A beta hemolytic streptococci.

- Skin: bright red, well demarcated.

Rapid treatment with oral or IV antibiotics if insufficient response

Ear Trauma

Auricle injuries:

Hematomas separate the perichondrium (blood supply) from the cartilage.

Treatment:

- Excise fibrous tissue
- Apply pressure-dressing, drain

Avulsion:

- Reimplantation.
- Microvascular anastomosis.

Cauliflower Ear a deformity as a complication for untreated auricle infection.

Racoon eyes sign

Battle's sign

Blood or CSF leakage:

Fractures:

Longitudinal:

– 80% of Temporal Bone Fractures
– 15-20% Facial Nerve involvement

Transverse:

– 20% of Temporal Bone Fractures
– 50% Facial Nerve Involvement

Acute Otitis media

Inflammation of the middle ear, may also involve inflammation of mastoid, petrous apex, and perilabyrinthine air cells.

- Most common reason for visit to pediatrician.
- Tympanostomy tube placement is 2nd most common surgical procedure in children.
- Development of multidrug-resistant bacteria.

Classification:

- Acute OM < 3 weeks
- Subacute OM 3 weeks to 3 months
- Chronic OM > 3 months

Epidemiology:

- Age (common in children)
- Sex
- Day care
- Seasons (more in winter)
- Genetics (runs in families)
- Breast-feeding (protective factor)
- Smoke exposure (increase risk)
- Medical conditions (examples bellow)

Medical Conditions:

- Cleft palate (effect Eustachian tube)
  - Decreases after repair
- Craniofacial disorders
  - Treacher-Collins
- Down's syndrome
- Ciliary dysfunction
- Immune dysfunction
  - AIDS
  - Steroids, chemo
  - IgG deficiency
- Obstruction
  - Adenoids (obstruct Eustachian tube)
  - NG tubes

- NT intubation
- Malignancy (nsopharyngeal cancer)

OM increases after newborn period:

- 2/3 with AOM by one year of age
- 1/2 with >3 episodes by three years
- Most common in 6 - 11 months

A lot of people mistake OM with teeth problem in children.

Day Care:

- Greater risk of AOM in children < 3 years
- Home care is best

Day care side effects:

- Large group
- Exposures with wider range of flora
- Increased URI's

Breast-feeding

- Decreases incidence of URI and GI disease
- Decreases duration of OM
  - Protective factor in breast-milk? (Antibodies from mother) Position for bottle-feeding is more transfers than breast- feeding position → Increase probability of regurgitation of milk to middle ear via Eustachian Tube.

Smoke exposure:

- Induces changes in respiratory tract
- Increased AOM and persistent effusion
- Increased chronic and recurrent AOM

Eustachian Tube:

Connects middle ear and nasopharynx, lumen shaped like two cones
Mucosa: Mucous producing cells, ciliated cells
Usually closed
Tensor veli palatini > active opening
Opens during:

- Swallowing
- Yawning
- Sneezing

Opening involves cartilaginous portion
Functions:

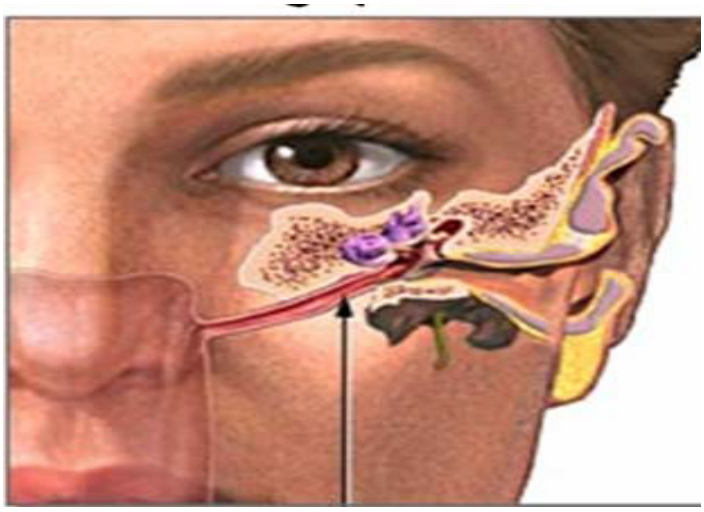
1. Protection from nasopharyngeal sound, secretions.
2. Clearance of middle ear secretions.
3. ME Ventilation (pressure regulation).

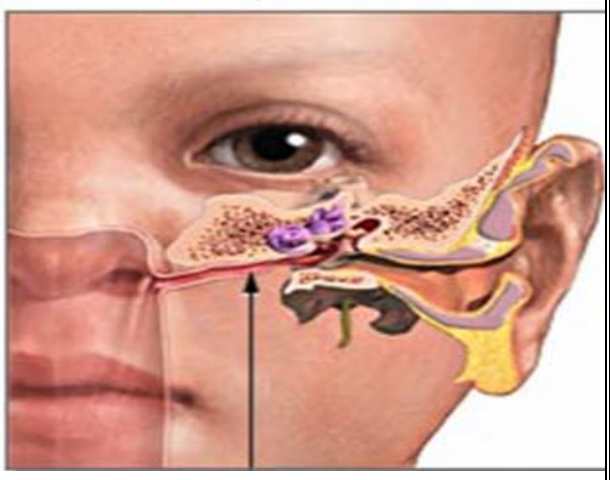
Children Eustachian tube:

- Longer bony portion
- 10 degree angle (Horizontal)
- Larger isthmus

Nasopharyngeal orifice in children:

- Relatively large
- Obstructed by adenoid, supine, crying and sniffing





Middle ear Pathology:

- Inflammation Edema
- PMN infiltration
- Epithelial ulceration
- Granulation tissue
- Fibrosis
- Influx of chronic inflammatory cells
- Increased columnar and goblet cells
- Osteitis

Microbiology:

- S. pneumoniae - 30-35%
- H. influenzae - 20-25%
- M. catarrhalis - 10-15%
- Group A strep - 2-4%
- Infants with higher incidence of gram negative bacilli

Virology:

- RSV - 74% of middle ear isolates
- Rhinovirus
- Parainfluenza virus
- Influenza virus

Treatment – AOM:

- Adults and older children - observation
- Antibiotics - consider drug resistance patterns

Antibiotics:

- First line:
  - Amoxil
  - Ceftin - B lactam stable
  - Bactrim
- Second line:

– Augmentin
– Ceftin
– Rocephin
- Macrolides - Zithromax, Biaxin

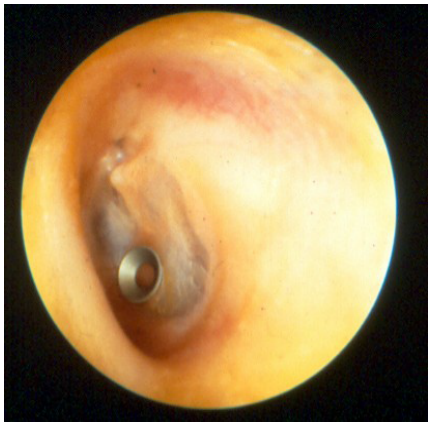
Treatment - Recurrent AOM: (if more than 3 episode in 6 monthes)

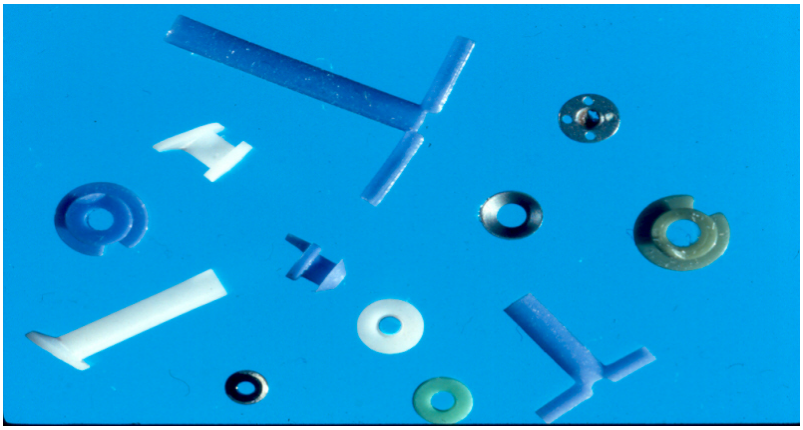
• Chemoprophylaxis (not that good! Long term drugs causes resistance)
– Sulfisoxazole, amoxicillin, ampicillin, Penicillin
– Less efficacy for intermittent propylaxis
• Myringotomy and tube insertion (better solution)
– Decreased # and severity of AOM
– otorrhea and other complications
• Adenoidectomy

Tympanostomy tube insertion:

• Unresponsive OME > 3 months
• Recurrent MEE (middle ear effusion)(if he stops antibiotics the infection comes again)
• Suppurative complication

Ventilating Tubes: different sizes (big ones for the recurrent)
T-tube is used for long durations but it leaves a hole in the tympanic membrane.

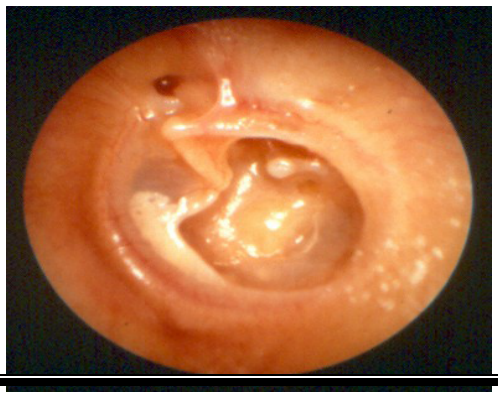




Complications of ventilation tube:

• Intratemporal:

– hearing loss
– TM perforation
– CSOM
– retraction pockets
– cholesteatoma (3rd picture bellow)
– mastoiditis
– petrositis
– labyrinthitis
– adhesive OM (1st picture bellow)



– tympanosclerosis (2nd picture bellow)
– ossicular dyscontinuity and fixation
– facial paralysis

• Intracranial:
– meningitis
– extradural abscess
– subdural empyema
– focal encephalitis
– brain abscess
– lateral sinus thrombosis
– otitic hydrocephalus