OTITIS MEDIA

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OTITIS MEDIA

OUTLINE

- Introduction and Classification
- Brief Anatomy of the middle ear
- Acute Suppurative Otitis Media (ASOM)
- Chronic Suppurative Otitis Media (CSOM)
- Nonsuppurative otitis media (NSOM)
- Special forms of otitis media

Introduction

- Inflammation of the middle ear
- In about 98% of cases are due to infection
- One of the 2 most common cause of ear pain
- Most common affliction necessitating medical therapy among U-5 in the US
- Accounts for one third of all a/biotic prescriptions in that age bracket
- 70% of all U-7 has suffered it once
- Grossly under diagnosed and under reported in our setting.

CLASSIFICATION

- Classified as
  - Acute & Chronic
  - Suppurative & Nonsuppurative

  - AAP & AAFP defines acute otitis media with 3 criteria
    - Acute onset
    - Middle Ear Effusion (MEE)
    - Middle Ear inflammation

- CLASSIFICATION contd

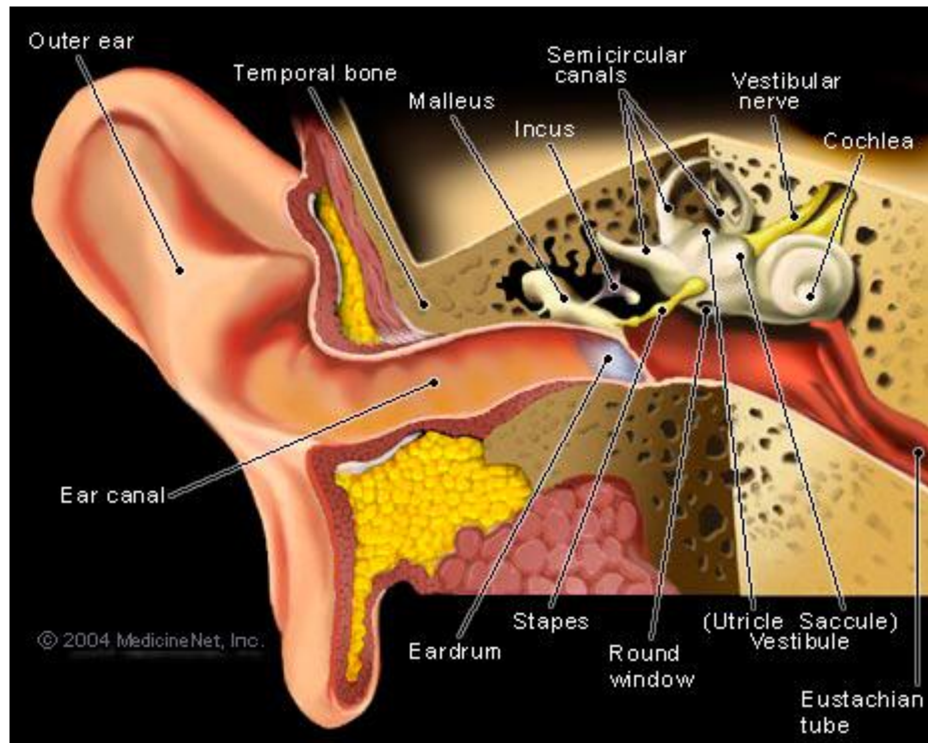
- WHO defines AOM as middle ear infection of acute onset less than a duration of 3wks
- COM when it persistent middle ear infection longer than 12wks with non intact ear drum (perforated TM) and discharge (otorrhea)

- Pathological classification is into
  - Suppurative – highly exudative polymorphs
  - Nonsuppurative – Poor in exudate

  - Combining both
    - ASOM CSOM ANSOM CNSOM

- CLASSIFICATION contd

- Several factors determine the course of middle ear infection
  - Px age and immunity
  - Virulence of infective organism
  - Degree of pneumatisation
  - State of drainage of the middle ear
  - A/b therapy



Outer ear
Temporal bone
Malleus
Incus
Semicircular canals
Vestibular nerve
Cochlea
Ear canal
Eardrum
Stapes
Round window
(Utricle Saccule)
Vestibule
Eustachian tube
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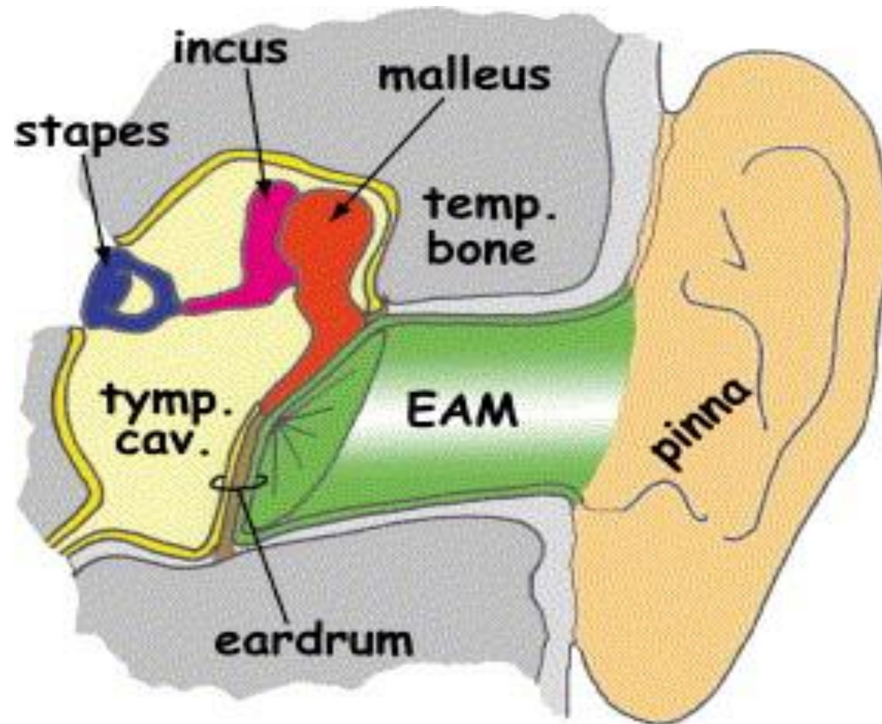

incus
malleus
stapes
temp.
bone
tymp.
cav.
EAM
pinna
eardrum

ANATOMIC REVIEW OF THE MIDDLE EAR

- Consist of
  - Middle ear cleft
  - Pharyngotympanic (Eustachian) tube
  - Mastoid air cell system
- Best understood as 6-sided cube
  - Lateral boundary- TM
  - Medial boundary – Promontory
  - Posterior – Additus & facial ridge
  - Anterior – tensor tympani & ET opening
  - Roof – teggmen tympani
  - Floor – jugular bulb/foramen

ANATOMIC REVIEW OF THE MIDDLE EAR contd

- Lined by respiratory type epithelium
- Cleft contains ossicular chain
- Mastoid system

- ACUTE SUPPURATIVE OTITS MEDIA

- Spreads rapidly
- Symptoms form ordered progression

- AETIOLOGY
- Usually follows URTI more commonly nasopharyngitis but also
  - Rhinitis
  - Sinusits
  - Tonsilitis

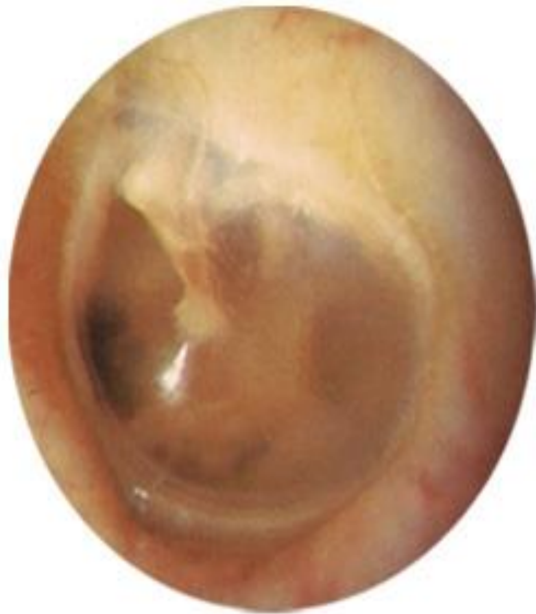
  - Commonest cause of URTI being RSV

AETIOLOGIC AGENTS

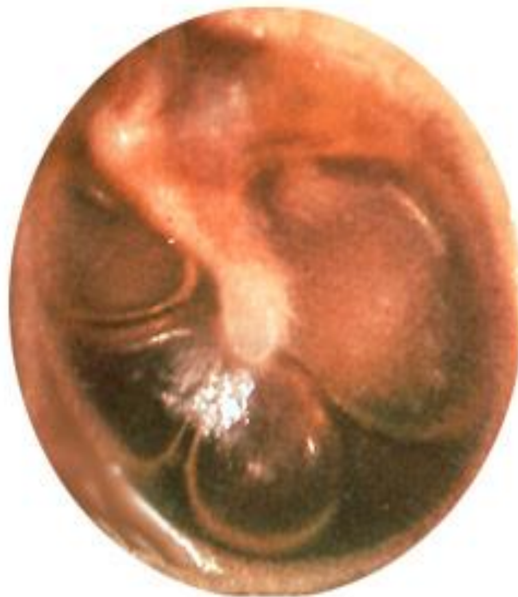
- In the order of importance
  - H. streptococcus
  - S. pneumoniae
  - S. albus & aureus
  - H. influenzae
  - Very rarely Pseudomonas

PATHOLOGY

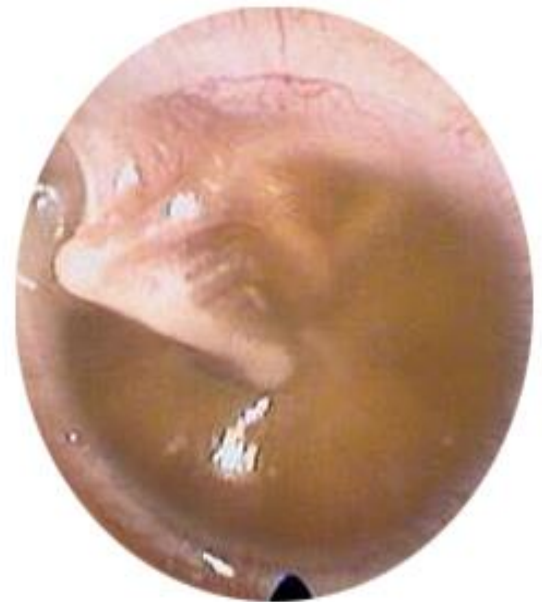
- Most times follows an organized order
  - Tubal occlusion
  - Cleft lining engorgement & oedema
  - Exudation into the Tymp Cavity & mastoid air cells
  - Initially serous later mucopurulent
  - TM bulges
  - Perforates/rupture
  - Hyperaemic decalcification
  - Osteitis
  - Subperiosteal abscess



Normal Ear
(no fluid)



Some Fluid
(air-fluid levels)



Effusion
(full of fluid)

CLINICAL FEATURES

- Basically Symptoms are best understood according to the stage of infection

- PHASE I Acute Eustachian Salpingitis
  - Feeling of fullness in the ear
  - Deafness – Conductive
  - TM retraction

CLINICAL FEATURES contd

- PHASE II Acute Infection of TC (Acute OM)
- Consist of 2 stages
  - Stage 1 (b/4 perforation)
    - ↑ Deafness
    - Hearing of bubbling sound in the ear
    - Stabbing or boring ear ache
    - Constitutional sympt – High grade fever ≥39°C
    - Malaise
    - Meningism
    - Convulsions
    - vomitting
  - Stage 2 (After perforation)
    - Otorrhoea
    - Relief of pain

CLINICAL FEATURES contd

- PHASE III (Retention of pus in the Mastoid – Acute Mastoiditis)
  - Pain/tenderness in the mastoid region
  - Oedema
  - Constitutional disturbances

- DIAGNOSIS
  - Based on clinical hx and a thorough physical exam

DIFFERENTIAL DIAGNOSIS

- Otitis Externa
- Furuncle of the external ear skin
- Post auricular adenitis
- Other causes of referred otalgia

TREATMENT

- 3 main modalities
  - Symptomatic
    - Rest & Sedation
    - Anagesia
    - Local heat (Hot water bottle)
  - Systemic
    - A/biotic therapy
  - Local
    - Myringotomy done before rupture
    - No ear drops except soothing ear drops like glycerine

TREATMENT contd

- Local contd
  - After rupture
    - Aural toileting
    - Systemic a/b in right dosing & duration
    - Vasoconstrictor NASAL sprays/drops every 4-6hours

  - In severe infections with fulminating mastoiditis, mastoidectomy is the tx of choice.

PROGNOSIS/SEQUELAE

- Resolution without sequelae
- Healing with scar – hearing impairment
- Open perforation
- Progression to CSOM
- Petrositis
- Meningitis
- Encephalitis

CHRONIC SUPPURATIVE OTITIS MEDIA (CSOM)

- Defined by the ffg criteria
  - Duration of at least 12weeks
  - Disrupted (ruptured) TM
  - Purulent exudate
  - Otorrhoea

- Basically 2 clinical types
  - Tubotympanic (‘safe’) type
  - Atticoantral (‘dangerous’) type

TUBOTYMPANIC DX

- Usually arise from ASOM in childhood or early infancy
- Xterized by
  - Centrally located perforation i.e non marginal
  - Intact ossicular chain
  - Pink & velvety TC mucosa which may be oedematous
  - Metaplastic mucosa epithelial cells

CLINICAL FEATURES

- Discharge usually mucoid, scanty & intermittent
- Deafness
- Usually no fever except during exercerbation

- TREATMENT
- Systemic & local a/b during active infections
- Aural toileting
- Tx of adjacent foci of infections
- Myringoplasty & ossiculoplasty

ATTICOANTRAL DX

- Xterised by
  - Marginal rupture
  - Associated with cholesteatoma the hallmark
  - Disrupted ossicular chain

- CHOLESTEATOMA
  - A destructive and expanding cystic growth of keratinizing squamous cell epith in the ME &/or mastoid process and contains cholesterol crystals and foreign body giant cells
  - 2 types
    - Congenital
    - Acquired

ATTICOANTRAL DX contd

- Congenital or Primary
  - Arise from embryonic epith tissues
  - Involves otic capsule causing
    - facial nerve palsy
    - Sensorineural deafness
- Diagnosis is usually confirmed at surgey

- Acquired or Secondary type
  - Occur in infancy or early childhood
  - Arise from blockage of ET due to infection of URT & adenoids

PATHOPHYSIOLOGY

- Retraction pocket formation in the postero superior margin of the attic
- Collection & impregnation with keratin
- Perforation of the weakened retraction pocket
- Invasion of attic
- Expansion of sac

- Once formed a cholesteatoma can suffer any of the ffg fate

PATHOPHYSIOLOGY contd

- Extrusion into the EAM
- Invasion of the tympanic cavity
- Disruption of the ossicular chain with sclerosis
- Encroachment of the mastoid
- Interference with ventilation
- Active infection of the keratotic mass

- Clinical fx
  - Deafness
  - Malodorous otorrhoea

DIAGNOSIS

- Usually from the hx of insiduous onset and physical exam and at surgery
- There may be no hx of AOM
- Finding of marginal TM perforation should always necessitate a more careful exam
- Findings of acellular mastoid on radiograph

- Tx
- Conservative
  - removal using fine crocodile forceps
  - Dry mopping
  - Lifetime follow up

Tx contd

- Surgical
  - In failed conservative mgmt orcomplications
  - Includes any of the ffg
    - Atticotomy
    - Antrotomy
    - Mastoidectomy

- COMPLICATIONS
  - Extracranial
    - Subperiosteal abscess
      - Zygomatic
      - Postauricular
    - Temporal bone osteomyelitis
    - septicemia

COMPLICATIONS contd

- Intracranial
  - Menigitis
  - Encephalitis
  - Sigmoid sinus thrombosis

NSOM

- Synonyms – glue ear, serous OM, OME
  - Simply a collection of fluid in the ME
  - No purulent exudate
  - Usually caused by negative press in the cleft as a result of
    - ETD
    - Unresolved AOM
    - Viral Infection
    - Allergy
    - Cleft palate

Clinical Fx

- Deafness
- Tinitus
- Vertigo
- Pain

- Examination reveals
  - Dull & retracted TM
  - Prominent malleus handle
  - Meniscus – air-fluid level & air bubbles

Diagnosis

- Suspect in all children suffering from all forms of 'tonsils & adenoid' syndromes
- Findings of a meniscus, bubble or air-fluid level or culture of fluid found on myringotomy confirms it.

- Tx
    - Myringotomy
    - Insertion of a grommet tube
    - Very rarely mastoidectomy

    - Recurrence occur in about 20% of cases.

SPECIAL FORMS OF OTITIS MEDIA

- Tuberculous
  - Xterised by tubercle formation, caseation & multiple perforations
  - Mgmt include aural toilet, mastoidectomy & anti-TB.
- Syphititic
  - Manifests as meningoneurolabyrinthitis & xterised by gumma formation
  - Diagnosis is by serological test & a finding of sensorineural deafness.
- Tx is by use of antisyphilitic a/b & occasionally mastoidectomy.