AUDIOLOGY - CHILDREN AND ADOLOSCENTS

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CHALLENGING

SYMPTOMS?

Diagnosing a newborn/ young child may be difficult due to lack of communication/ description of potential symptoms.

POTENTIALLY GENERIC

Irritability, crying, change in behaviour, altered sleeping patterns, change in appetite, fever, touching the head/ ear area, respiratory infections are potential signs.

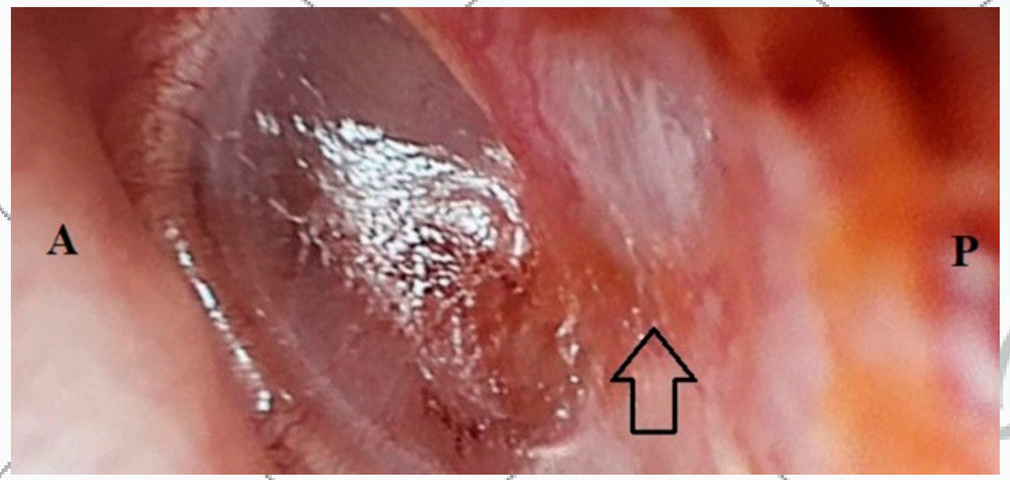
EXCESS CERUMEN

- Part of routine check-up: otoscopy
- Only remove wax if blocking ear canal / visualisation of Tympanic membrane is not possible
- Sound travels by air - only a small opening is needed
- Always use oil before wax removal (children and adults)
- Irrigation vs suction
- If using irrigation advice for continuation of oil for 2-3 additional days (removing excess H2O).
- Check whether routine oil use is recommendable (not saline)

Myringitis

- https://pmc.ncbi.nlm.nih.gov/articles/PMC6424705/

Granular & Eczematoid

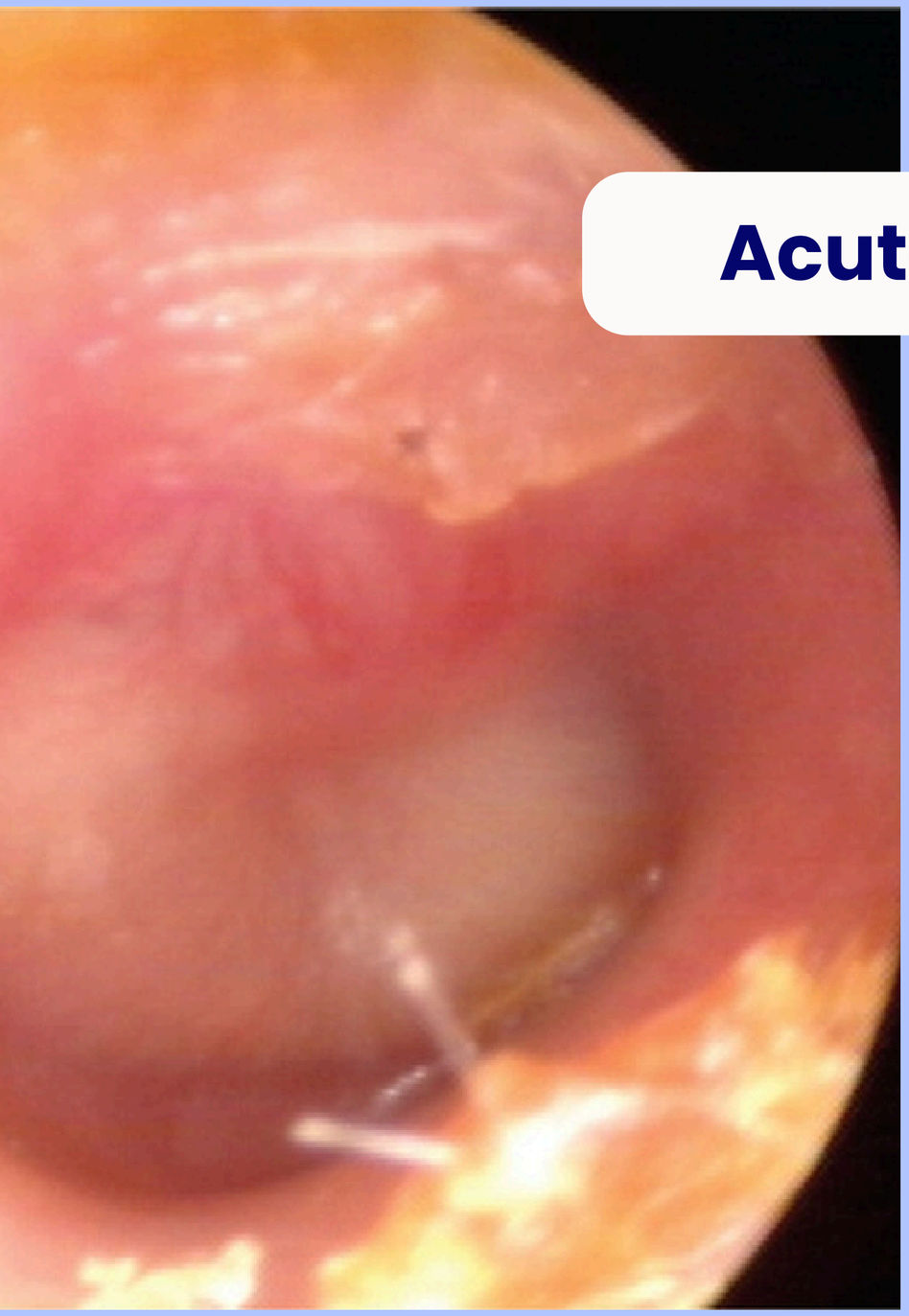


- Chronic inflammation
- Trauma (or external cause)
- Staph. Aurues or pseudomonas
- Painless otorrhoea
- Granular / ulcerative
- Conductive or no hearing loss
- Surgery > topical Rx, ablation

Bullous, Haemhorragic & Fungal

- Acutre inflammation
- Otitis media (or externa)
- Strep. pneumoniae or H. Influenzae
- Painful, maybe otorrhoea
- Blister / cystic
- Conductive hearing loss
- Analgesics, decongestants, Abx - combination of topical & systemic .. ? topical steroids
- Fungal - antimycotics

Otitis Media



Acute

https://www.aafp.org/pubs/afp/issues/2013/1001/p435.html#:~:text=Management%20of%20acute%20otitis%20media%20should%20begin%20with%20adequate%20analgesia,are%20not%20allergic%20to%20penicillin.

Strep. Pneumoniae, H. Influenzae, Moraxella Catarrhalis.
Acute onset: Abx might be delayed in mild symptoms (2+ years). Watchful waiting - revisit - analgesia. Abx of Choice - Amoxicillin (80-90mg/kg/day. Consider B lactamase

OME

Not acute - but presence of effusion

Antibiotics not indicated
Decongestants - not indicated

Steroids - Mixed evidence

Hypertonic Saline - Very safe!

DIAGNOSIS

OTOSCOPY AND TYMPANOMETRY

Acute otitis media may be identified using otoscopy. Tympanometry is certainly needed to diagnose OME (especially glue ear).

Always refer delayed speech to audiologic eval.

Table 1. Risk Factors for Acute Otitis Media

Age (younger)
Allergies
Craniofacial abnormalities
Exposure to environmental smoke or other respiratory irritants
Exposure to group day care
Family history of recurrent acute otitis media
Gastroesophageal reflux
Immunodeficiency
No breastfeeding
Pacifier use
Upper respiratory tract infections

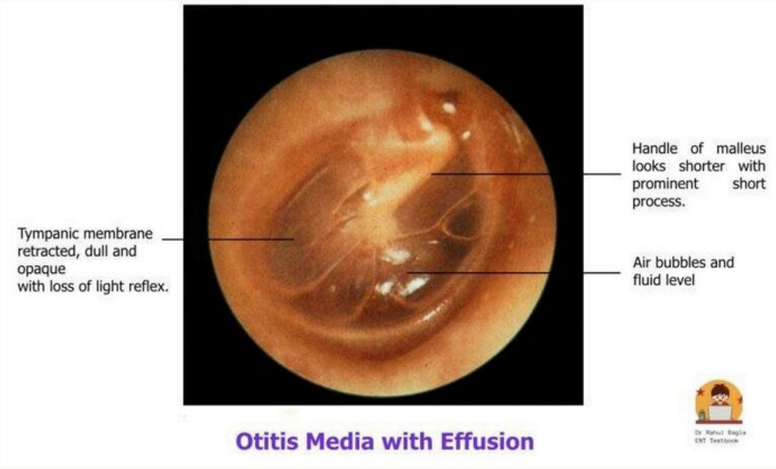
Information from references 8 and 9.

Table 2. Treatment Strategy for Acute Otitis Media

Initial presentation
Diagnosis established by physical examination findings and presence of symptoms
Treat pain
Children six months or older with otorrhea or severe signs or symptoms (moderate or severe otalgia, otalgia for at least 48 hours, or temperature of 102.2°F [39°C] or higher): antibiotic therapy for 10 days
Children six to 23 months of age with bilateral acute otitis media without severe signs or symptoms: antibiotic therapy for 10 days
Children six to 23 months of age with unilateral acute otitis media without severe signs or symptoms: observation or antibiotic therapy for 10 days
Children two years or older without severe signs or symptoms: observation or antibiotic therapy for five to seven days
Persistent symptoms (48 to 72 hours)
Repeat ear examination for signs of otitis media
If otitis media is present, initiate or change antibiotic therapy
If symptoms persist despite appropriate antibiotic therapy, consider intramuscular ceftriaxone (Rocephin), clindamycin, or tympanocentesis

Information from reference 8.

MANAGEMENT OF OME



SPEECH DELAY - REFER

NICE Guidelines indicated watchful waiting for 3 months. There is no strong evidence for use of steroids (nasonex). Nonetheless, some evidence does suggest improvement. Hypertonic saline – safe with emerging evidence

NO RESOLVE

Grommets vs hearing aids (NICE)

The more the child grows the lesser the risk
Seasonal Summer vs Winter
Risk Factors

HEARING

Hearing in children can be measured depending on age. OME is likely to cause mild-moderate hearing loss in the low frequencies. Tympanometry is the instrument of choice. Hearing can be checked acc. to possibility and clinical judgment

1

ABR

2

Visual response audiometry

3

Play Audiometry

4

Pure tone audiometry

OTITIS EXTERNA

RISK FACTORS

Swimming, Perspiration, lack of cerumen, contaminated H2O, cotton buds, canal trauma, eczema, psoriasis, acne, dermatitis, and hearing aids

BACTERIAL, FUNGAL, INFLAMMATION

Rx depends on severity/ progression/ other symptoms:

Non-medicated OTC: Borax/ Earol

OTORRHOEA

Cause	*Characteristics*
Otitis externa	
Acute bacterial	Scant white mucus, but occasionally thick
Chronic bacterial	Bloody discharge, especially in the presence of granulation tissue
Fungal	Typically fluffy and white to off-white discharge, but may be black, gray, bluish-green or yellow; small black or white conidiophores on white hyphae associated with Aspergillus
Otitis media with perforated tympanic membrane	
Acute	Purulent white to yellow mucus with deep pain
Serous	Clear mucus, especially in the presence of allergies
Chronic	Intermittent purulent mucus without pain
Cerebrospinal fluid leak	Clear, thin and watery discharge
Trauma	Bloody mucus
Osteomyelitis	Otorrhea with odor

VISUALISE EAR CANAL

VISION

At times debris, mucus, old pus make it challenging to visualise the extent of the progression. Cleaning is recommended. Suction > irrigation
(Borax may help soften)
No irrigation if ™ is perforated

MASTOIDS AND WALL

The patient should be assessed for mastoiditis, myringitis,. sore throat, tonsils, nose, TMJ and other glands (palpation)

RX

Clinical Judgement is important.
Analgesia in case of pain
Refer complicated cases to hospital

Always make sure of resolution - Follow-up
drops: Rx -3 days following cessation (5-7days)
more severe 10-14 days

Otherwise:

1

Antiseptic solutions

2

Topical Abx with or without steroids (inflammation and oedema) warm bottle in hand to avoid dizziness

3

Systemic Abx - persistent, fever, severe pain, mastoid involvement, lymphadenopathy necrotizing OE

4

IV ABx - infection does not respond, signs of sepsis

NECROTIZING OE

Infected granulation tissue (bony , infection of mastoid or temporal bone (more common in diabetes, old people, and immunocompromised. --- Emergency

- Otalgia and headache are more severe than signs
- Examination observes granulation tissue at bony cartilage junctions

Fig. 1. Malignant otitis externa with ecthyma gangrenosum patch over scalp (arrow).

FUNGAL OE

Suction - Borax tds/ qds 3-5 days

If persistent or complicated anti-fungal

HEARING LOSS

CONGENITAL

Risk is less likely due to local ABR screening. However, may have false positives.

ACQUIRED

Viral infections, medications, auto-immune disorders, can all cause conductive and SNHL. Refer when there is suspicion of delayed or intellectual development.

COCHLEAR IMPLANTS

Invasive surgery involving an inner array of electrodes placed along the cochlear cells pathway. An external processor which gathers sound and transfers it to the inner electrode array.

- Electronic sound
- Needs auditory rehabilitation / therapy

- Indicated when inner hair cells are damaged to profound SNHL
- Is ineffective if acoustic nerve is absent or damaged

HEARING AIDS

Indicated when there is mild to severe hearing loss in children. Non-invasive and safe, but may need continued support by audiologist.

Conductive hearing loss may require more visits.

They are becoming an option for conductive hearing loss till the child grows out of the chronic disease

BAHA (BONE COND.)

Indicated when there is hearing loss which is conductive (middle ear), and no surgery is indicated. These are hearing aids which transmit sound to the bony skull. The sound is then delivered to the better hearing cochlea.

A non-invasive option (private and more expensive) is available but requires more visits. up to moderate HL.

AUDITORY PROCESSING DISORDER

Normal hearing structures and audiometric thresholds. However patient struggles to hear / concentrate in background noise

1

Normal hearing

2

More common in autism/ adhd

3

Difficulty in processing sounds at cortical level

4

Hearing assistive devices improve

AUDITORY NEUROPATHY DISORDER

Normal hearing structures and audiometric thresholds (not always). Auditory nerve does not send appropriate information to the cortex – distorted sound.

HEARING LOSS – VESTIBULAR SYMPTOMS

Hearing loss may cause a rise in vestibular symptoms in children.

Both cochlear but even conductive - glue ear.

Some children may have adult like symptoms: BPPV, vestibular neuritis, labyrinthitis, balance disorders etc.

Rx - Manuevere’s if BPPV
Otherwise Vestibular rehabilitation therapy

SSRIs controversial in children

THANK YOU!!!

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