



Acute otitis media and homoeopathic management

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Abstract

Acute otitis media (AOM) is a common ear infection that primarily affects children, leading to significant discomfort and potential complications if left untreated. Antibiotics and analgesics are used in the traditional treatment of AOM; however, growing concerns about antibiotic resistance have sparked interest in alternative medications. This article explores the role of homeopathy in managing AOM. The article discusses the pathology and complications of AOM and highlights commonly prescribed remedies.

Introduction

Acute otitis media is characterized by an infection occurring within the middle ear space, encompassing various conditions like acute otitis media (AOM), chronic suppurative otitis media (CSOM), and otitis media with effusion (OME). It ranks as the second most common diagnosis among pediatric cases in emergency departments, following upper respiratory infections. Although otitis media can manifest at any age, it is most frequently observed in children aged 6 to 24 months.¹

Middle ear infections can result from viral, bacterial, or co-infections. The primary bacterial pathogens associated with otitis media include *Streptococcus pneumoniae*, followed by non-typeable *Haemophilus influenzae* (NTHi) and *Moraxella catarrhalis*. The introduction of conjugate pneumococcal vaccines has led to a shift in pneumococcal strains to non-vaccine serotypes. Viral agents commonly linked to otitis media encompass respiratory syncytial virus (RSV), coronaviruses, influenza viruses, adenoviruses, human metapneumovirus, and picornaviruses.¹

Otitis media is a complex condition influenced by various factors. Infectious, allergic, and environmental elements all play roles in its development. These contributing factors and risk factors encompass:

1. Reduced immunity stemming from conditions like human immunodeficiency virus (HIV), diabetes, and other immune deficiencies.
2. Genetic predisposition.
3. Abnormalities in mucins gene expression, particularly the overexpression of MUC5B.
4. Structural irregularities in the palate and tensor veli palatini.
5. Dysfunction of cilia.
6. Presence of cochlear implants.
7. Deficiency in vitamin A.
8. Bacterial pathogens such as *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Moraxella (Branhamella) catarrhalis*, accounting for over 95% of cases.
9. Viral pathogens including respiratory syncytial virus, influenza virus, parainfluenza virus, rhinovirus, and adenovirus.
10. Allergies.
11. Insufficient breastfeeding.
12. Exposure to secondhand smoke.
13. Attendance in daycare facilities.
14. Lower socioeconomic status.
15. Family history of recurrent acute otitis media (AOM) in parents or siblings.¹

Epidemiology

The epidemiology of otitis media presents it as a global concern, with a slightly higher prevalence among males compared to females. Determining the exact number of cases per year poses challenges due to underreporting and variations in incidence across different geographical regions. The highest occurrence of otitis media is typically observed between six and twelve months of age, tapering off after the age of five. Roughly 80% of all children will experience at least one episode of otitis media during their childhood, and between 80% and 90% will encounter otitis media with effusion before reaching school age. While otitis media is less prevalent in adults compared to children, certain sub-populations, such as those with a history of recurrent OM during childhood, cleft palate, immunodeficiency, or compromised immune status, are at higher risk.¹

Pathophysiology

Otitis media initiates as an inflammatory response subsequent to a viral upper respiratory tract infection, affecting the mucosa of the nose, nasopharynx, middle ear mucosa, and Eustachian tubes.¹

The disease undergoes four stages³

1. Stage of Tubal Occlusion - Tubal blockage following oedema and hyperaemia of nasopharyngeal end of eustachian tube leads to absorption of air and negative intratympanic pressure. It further causes tympanic membrane retraction and some effusion in the middle ear. Here the fluid may not be clinically appreciable. Symptoms- generally no fever. Deafness and earache present but may not be significant. Signs- retracted tympanic membrane with handle of malleus assuming a more horizontal position prominence of lateral process of malleus and loss of light reflex. Tuning fork tests show conductive deafness.
2. Stage of Pre Suppuration - Prolonged tubal occlusion leads to invasion of pyogenic organisms in tympanic cavity causing hyperemia of lining and appearance of inflammatory exudate. There will be congestion of the tympanic membrane. Earache is marked and is of throbbing character, and along with deafness and tinnitus. In children high degree of fever is present with restlessness. Signs- congestion of pars tensa, cart-wheel appearance at the periphery of tympanic membrane due to appearance of leash of blood vessels along the handle of malleus. Later, the whole tympanic membrane including pars flaccida becomes uniformly red. Tuning fork tests will again show conductive type of hearing loss.
3. Stage of Suppuration - This stage is characterized by the accumulation of pus in the middle ear and partially in the mastoid air cells. The tympanic membrane begins to bulge, nearing the point of rupture. Symptoms include severe ear pain, worsening deafness, and a fever ranging from 102 to 103°F in children, often accompanied by vomiting and potentially even convulsions. Clinical signs show a red, bulging tympanic membrane with obscured landmarks. The handle of the malleus may be engulfed by the swollen membrane and thus not visible. A yellowish spot may be apparent on the tympanic membrane, indicating imminent rupture. In preantibiotic era, one could see a nipple-like protrusion of tympanic membrane with a yellow spot on its summit. Tenderness may be elicited over the mastoid antrum.
4. Stage of Resolution - The rupture of the tympanic membrane leads to the discharge of pus and a reduction in symptoms. The inflammatory process begins to resolve. In cases where proper treatment is initiated early or when the infection is mild, resolution may commence even without the rupture of the tympanic membrane. Symptoms such as ear pain are alleviated with the drainage of pus, fever decreases, and the child's overall condition improves. Clinical signs include a discharge from the external auditory canal, initially tinged with blood but later becoming mucopurulent. Typically, a small perforation is observed in the anteroinferior quadrant of the pars tensa. The hyperemia of the tympanic membrane starts to diminish, returning to its normal color and revealing its landmarks.

Evaluation

The diagnosis of otitis media relies primarily on clinical assessment, with no requirement for laboratory tests or imaging. Initial examination should involve otoscopy, which is both convenient and informative. Pneumatic otoscopy emerges as the most reliable method, offering superior sensitivity and specificity compared to regular otoscopy. In acute otitis media, the tympanic membrane may appear red or normal, with fluid possibly present in the middle ear. In cases of suppurative otitis media, obvious purulent fluid will be visible along with a bulging tympanic membrane. If there is edema in the external ear canal, caution should be taken to differentiate from otitis externa.

Visualizing the intact tympanic membrane is crucial. If the tympanic membrane is intact and the external ear canal is painful and red, otological drops may be used to treat otitis externa.

Laboratory Studies

Laboratory evaluation is rarely necessary. Laboratory studies may be needed to confirm or exclude possible related systemic or congenital diseases.

A full sepsis workup in infants younger than 12 weeks with fever and no obvious source other than associated acute otitis media may be necessary.

Imaging Studies

Imaging studies are not indicated unless intra-temporal or intracranial complications are a concern.

- When an otitis media complication is suspected, computed tomography of the temporal bones may identify mastoiditis, epidural abscess, sigmoid sinus thrombophlebitis, meningitis, brain abscess, subdural abscess, ossicular disease, and cholesteatoma.
- Magnetic resonance imaging may identify fluid collections, especially in the middle ear collections.¹

Tympanocentesis

Tympanocentesis may be used to determine the presence of middle ear fluid, followed by culture to identify pathogens. Tympanocentesis can improve diagnostic accuracy and guide treatment decisions but is reserved for extreme or refractory cases.

Other Tests

Tympanometry and acoustic reflectometry may also be used to evaluate for middle ear effusion¹

Treatment

The management of recurrent acute otitis media (AOM) is categorized into medical and surgical approaches. Medical therapy primarily involves the administration of topical antiseptics, as well as topical and oral antibiotics. Surgical intervention typically entails the insertion of a tympanostomy tube into the middle ear cavity. Restoring

the slightly acidic environment of the outer and middle ear cavities aids in resolving ear infections, making the application of acidic solutions to reduce pH beneficial.²

Differential diagnosis¹

<ul style="list-style-type: none"> ● Cholesteatoma ● Fever in the infant and toddler ● Fever without a focus ● Hearing impairment ● Pediatric nasal polyps ● Nasopharyngeal cancer ● Otitis externa ● Human parainfluenza viruses (HPIV) and other parainfluenza viruses ● Passive smoking and lung disease ● Teething 	<ul style="list-style-type: none"> ● Pediatric allergic rhinitis ● Pediatric bacterial meningitis ● Pediatric gastroesophageal reflux ● Pediatric Haemophilus influenzae infection ● Pediatric HIV infection ● Pediatric mastoiditis ● Pediatric pneumococcal infections ● Primary ciliary dyskinesia ● Respiratory syncytial virus infection ● Rhinovirus infection
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Complications¹

Due to the complex arrangement of structures in and around the middle ear, complications, once developed, are challenging to treat. Complications can be divided into intratemporal and intracranial complications. Furthermore, it's crucial to consider the impact of otitis media (OM) on hearing, especially during the critical 6-24 month age bracket, which coincides with significant language development milestones reliant on hearing abilities. Persistent or recurring OM-induced conductive hearing loss can hinder language acquisition and may lead to prolonged speech difficulties necessitating speech therapy.

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Intratemporal complications	Intracranial complications
<ul style="list-style-type: none"> ● Hearing loss (conductive and sensorineural) ● TM perforation (acute and chronic) ● Chronic suppurative otitis media (with or without cholesteatoma) ● Cholesteatoma ● Tympanosclerosis ● Mastoiditis ● Petrositis ● Labyrinthitis ● Facial paralysis ● Cholesterol granuloma ● Infectious eczematoid dermatitis 	<ul style="list-style-type: none"> ● Meningitis ● Subdural empyema ● Brain abscess ● Extradural abscess ● Lateral sinus thrombosis ● Otitic hydrocephalus

Homeopathic approach

Different repertories have numerous rubrics mentioned which can be used symptomatically. Here we mention only first grade medicines.

1. KENT REPERTORY⁴

- **EAR-STOPPED** sensation: **Asar, Car-v, Con, Lyc, Merc, Puls, Sil**
- **EAR-SUPPURATION: middle ear:** **Calc-s, Hep, Kali-bi, Merc**
- **EAR-SWELLING:** **Calc, Graph, Puls**
- **EAR-PAIN:** tearing in: **Bell, Caust, Cham, Chin, Kali-c, Lyc, Merc, Puls, Sulph**
- **EAR-PAIN:** aching in: **Cham, Dulc, Puls, Sulph, Tell**

2. BOENNIGHAUSEN BOGER CHARACTERISTICS AND REPERTORY⁵

- **EARS:Aching:** **NUX-V, PUL**
- **EARS:Discharge:** **CON, LYC, MERC, PULS, SUL**
- **EARS:Pains, acute, tearing, rending, etc:** **CHAM, MERC, PUL, SUL**

3. BOERICKE REPERTORY⁶

- **EARS:** TYMPANUM(middle ear)- inflammation(otitis)-

Acute- *Acon., Bell., Ferr. p.,Kali m., Merc.,*

- **Suppurative**

Acute (otitis media suppurative, acute)-- *Acon., Bell., Caps., Cham., Ferr. p., Hep., Merc. v., Plant.,*

Chronic-- *Æthiops., Ars. iod., Calc. c., Calc. iod., Caust., Hep., Kali bich., Kali s., Merc. v., Psor., Puls., Sil., Sul., Thuja.,*

4. PHATAK REPERTORY⁷

- **EARS: Aching:** CHAM, FER-P, PULS,
- **EARS: DISCHARGE, From:**LYC, MERC, PSOR, PUL

Homeopathic therapeutics

1. Aconite - External ear hot, swollen, red, painfully sensitive roaring in ears, music unbearable, tearing in left ear.⁸ Complaints and tension caused by exposure to dry, cold weather, draught of cold air, checked perspiration, also complaints from very hot weather. First remedy in inflammations, inflammatory fevers.⁶
2. Arsenicum - Profuse, ichorous, foul discharges from ears, accompanied by burning itching in the canal and crawling sensations in the ears; red burning pustules, which become painful ulcers, in the canal and upon the auricle ; stitching tearing from the left meatus outwards, worse in the evening ; intolerable pains, roaring in ears with each paroxysm of pain, general debility, relief by warm applications.⁸ Thin, excoriating, offensive otorrháa. Roaring in ears, during a paroxysm of pain.⁶
3. Aurum - Caries of mastoid process ; exceedingly offensive discharge from the ear, with drawing pains, worse at night, relieved by warm and worse by cold applications annoying dryness in ears and nose, with difficult hearing.⁸ obstinate fetid otorrháa after scarlatina. External meatus bathed in pus.⁶
4. Belladonna - Stitches in and behind ears; digging and boring pains in internal and external ear in a downward direction ; shooting in internal ear, with hardness of hearing on same side ; extreme sensitiveness to noise, deafness as if a skin were drawn over the ears, red and hot face.⁸ Tearing pain in middle and external ear. Humming noises. Membrana tympani bulges and injected. Parotid gland swollen. Sensitive to loud tones. Hearing very acute. Otitis media. Pain causes delirium. Child cries out in sleep; throbbing and beating pain deep in ear, synchronous with heart beat. Hematoma auris. Acute and sub-acute conditions of Eustachian tube. Autophony-hearing one's voice in ear.⁶
5. Calcarea carb - Profuse bland otorrhœa, or purulent and offensive discharge ; polypus of the ear, inflammation and swelling of outer and inner ear, with pulsations in them.
Throbbing; cracking in ears; stitches; pulsating pain as if something would press out.⁸ Deafness from working in water. Polypi which bleed easily. Scrofulous inflammation with muco-purulent otorrháa, and enlarged glands. Perversions of hearing; hardness of hearing. Eruption on and behind ear (Petrol). Cracking noises in ear. Sensitive to cold about ears and neck.⁶

7. Capsicum - Pain deep in the ear, of a drawing-tearing character, worse at night; periostitis mastoidea, with tearing pain in it; tympanum perforated, and cavity filled with thick yellow pus ; pressive, later itching pain, deep in ear ; dull hearing after previous burning and stinging.⁸
9. Chamomilla - Lancinations, or tensive and drawing pains extending to lobe of ears ; dry ears as if stopped up; great sensitiveness to noise, especially to music ; excessive sensitiveness to pain ; suspicious, ill-humored, and easily angered ; stitches in ear, especially when stooping.⁸ Ringing in ears. Earache, with soreness; swelling and heat driving patient frantic. Stitching pain. Ears feel stopped.⁶
10. Curare - Lancinating nervous pains, starting from the ears, and reaching down the legs, so that he is obliged to lie down : different noises in ears, as of whistling, crying of animals ; unbearable earache, so that he loses consciousness ; internal otitis, driving one crazy ; purulent discharge.⁸
11. Ferrum phos - Noises. Throbbing. First stage of otitis. Membrana tympani red and bulging. Acute otitis; when Bellad fails, prevents suppuration.⁶
13. Hepar sulph - Extreme sensitiveness to contact ; dread of contact, out of proportion to the actual pain ; canal filled with white, cheesy, bloody pus, and surrounding skin scurfy and irritated ; little pustules in the meatus and auricle, wherever the pus touched ; haemorrhage from the slightest touch ; relief from hot applications, cannot bear anything cold ; cracking in ears when blowing nose.⁸ Discharge of fetid pus from the ears. Whizzing and throbbing in the ears, with hardness of hearing. Deafness after scarlet fever.⁶
14. Hydrastis - Otorrhoea, with thick, mucous discharge ; dropping down of mucus from the posterior nares into the throat ; roaring in ears, like from machinery.⁸
15. Kali bichromaticum - Discharge of thick, yellow, fetid pus ; itching deep in ear, with stinging pains ; sharp stitching pains dart from the ear to throat; ulcers upon tympanum, which are dry but not painful, excepting the sharp stitches ; naso-pharyngeal catarrh ; ulceration of anterior nares, with a discharge of tough ropy mucus ; indolent ulcers; glands swollen, neck painful to touch.⁸ Swollen, with tearing pains. Thick, yellow, stringy, fetid discharge. Sharp stitches in left ear.⁶
16. Kali hydroiod - Irritating offensive discharge, accompanied by boring-tearing pains in the temporal bone ; during day a dull, tense, numb feeling in affected side of head, which during night becomes intolerable ; sudden shocks of pain.⁸
17. Kali mur - Hardness of hearing from swelling and catarrh of the Eustachian tube and middle ear.⁸ Chronic, catarrhal conditions of the middle ear. Glands about the ear swollen. Snapping and noises in the ear.⁶
18. Merc sol- Thick, yellow discharge; fetid and bloody. Otagia, worse warmth of bed; at night sticking pains.⁸
19. Merc dul- Otitis media; closure of Eustachian tube; ear troubles of scrofulous children; membrana tympani retracted, thickened and immovable.⁸
20. Natrum carb - Otagia, with sharp piercing stitches in ears ; ears feel as if closed up.⁸
23. Psorinum - Peevish, unhealthy-looking children, who have a disagreeable odor about them aside from that which comes from the ear; watery stinking diarrhoea; offensive purulent otorrhoea, pustules on and behind concha.⁸ chronic otorrhœa. Most fetid pus from ears, brownish, offensive.⁶

24. *Pulsatilla nigricans* - otorrhoea, with redness and pain, pressure through ear, with free formation of crusts in meatus ; otalgia, with darting-tearing pains and pulsating at night, with bland, nearly inoffensive, discharge of mucus and pus ; better outdoors and during day; scabs on tragus.⁸ Sensation as if something were being forced outward. Hearing difficult, as if the ear were stuffed. Otorrhœa. Thick, bland discharge; offensive odor. External ear swollen and red. Catarrhal otitis. Otagia, worse at night. Diminishes acuteness of hearing.⁶
25. *Silicea* - Caries of mastoid process ; offensive, watery, curdy otorrhoea, with soreness of inner nose and crusts on upper lip ; itching in Eustachian tube and in ears ; the child bores into its ears when asleep, causing a discharge of blood and pus ; sudden stopped feeling in ears, passing off when yawning or swallowing; ulceration of the tympanum, with itching and sharp stinging pains ; the child seems to enjoy having the ear cleansed with the cotton probe ; sounds in ears like the ringing of bells ; otalgia from within outwards ; slow painless swelling and suppuration of parotid.⁸Fetid discharge. Caries of mastoid. Loud pistol-like report. Sensitive to noise. Roaring in ears.⁶
26. *Sulphur* - Much itching in ears, changing to pain when attempting to scratch them ; dirty, offensive, sometimes sour-smelling pus flowing from ears ; children averse to have them washed ; wabbling, as if water was in the ears.⁸ Bad effects from the suppression of an otorrhœa. Oversensitive to odors. Deafness, preceded by exceedingly sensitive hearing; catarrhal deafness.⁶
27. *Tellurium* - Discharge thin, watery, very excoriating, and of intensely disagreeable odor ; wherever it comes in contact skin is scalded, and little vesicles appear on excoriated surface ; vesicular eruption on tympanum, followed by suppuration and permanent injury to hearing ; haemorrhage from the ear.⁸ Eczema behind ear. Catarrh of middle ear, discharge acrid, smells like fish-pickle. Itching, swelling, throbbing in meatus. Deafness.⁶
28. *Terebinthina* - Otitis, combined with enlarged tonsils ; granular condition of the naso-pharyngeal cavity ; during dentition signs of cerebral and abdominal irritation ; otalgia of children old enough to express their sufferings.⁸
29. *Thuja* - Watery purulent otorrhoea, smelling like putrid meat; inner ear feels swollen, with increased hardness of hearing ; noise in ear as from boiling water.⁸
Chronic otitis; discharge purulent⁶
30. *Zincum* - Otorrhoea of fetid pus; frequent acute stitches in right ear,-near tympanum; earache of children, especially boys.⁸

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