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# ACUTE PURULENT OTITIS MEDIA (OTITIS MEDIA PURULENTA ACUTA): ETIOLOGY, PATHOGENESIS, CLINICAL PRESENTATION AND MODERN TREATMENT OPPORTUNITIES

**Jurayev Khondamir Alisher ugli.**
Fergana medical institute of public health
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**Abstract.** Acute purulent otitis media (Otitis media purulenta acuta) is an acute inflammatory disease of the old layer of the middle ear cavities (tympanic cavity, additional tube and tympanic membrane), accompanied by exudation and pus formation. This pathological study is one of the most frequent in practice and, if not treated in a timely manner, can lead to severe internal injuries and intracranial hemorrhage.

**Keywords:** Tubotitis. Eustachian tube. Otosalpingitis. Streptococcus, Staphylococcus and Pneumococcus. Valsalva test. Tympanic cavity, Middle ear, Eardrum.

## INTRODUCTION

The main bacterial and viral infections play a role in the development of acute otitis media. The most common pathogens are:

Streptococcus pneumoniae (about 40-50%).

Haemophilus influenzae (20-30%).

Moraxella catarrhalis (10-15%).

Viral-bacterial associations: The background of rhino-sinusitis or acute respiratory viral infections (ARVI) is the background for the development of secondary bacterial flora due to the impaired immune response of the cells.

Routes of infection:

Tubogenic route: The most common mechanism. Infection spreads from the nasal cavity and larynx to the tympanic cavity via the eustachian tube.

Hematogenous route: Spread through the blood in severe infections such as measles, scarlet fever, and influenza.

Traumatic route: Entry through a traumatic route associated with damage to the eardrum.

The pathogenetic anatomical basis of the disease is directly related to the inflammatory processes in the nasal cavities and the swelling of the lateral layer, its closure and tympanic membrane. The process of transudation begins, which, with the addition of the disease, turns into purulent exudate. The filling of the auditory ossicles (hammer, pinna, stirrup) with pus causes a sharp decrease in the conductivity of sounds.

**Research objective:** Clinical disease progresses through four distinct stages:

Stage I: Acute eustachitis (catarrhal stage)

Pathogenesis : Inhibition of auditory tube function and negative pressure in the tympanic cavity.

Clinical features: A feeling of fullness in the ear, some degree of hearing one's own voice (autophony), and uncontrollable pain.

Otoscopy: Indentation of the eardrum, reduction or disappearance of the light cone, bulging of the tympanic membrane, injection of blood vessels.

Stage II: Acute purulent renewal (pre-perforation stage)

Pathogen: Accumulation of pus in the tympanic cavity, pronounced edema and hyperemia around the tympanic membrane and appendages. Increased pressure causes strong stimulation of pain receptors.

Clinical features: Severe, stabbing or throbbing pain in the ear (often worse at night), fever up to 38-39°C, signs of general intoxication.

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Otoscopy: The tympanic membrane is slightly red (hyperemic), thickened, and protrudes into the thick ear canal (especially in the posterior-superior quadrant). Anatomical landmarks are not visible.

Stage III: Perforative stage

Pathogenesis: Rupture of the tympanic membrane under the influence of purulent exudate and proteolytic enzymes.

Clinical features: Otorrhea (purulent discharge from the ear). When this condition is observed, the ear pain is severe, the body temperature returns to normal, and the patient's general condition improves.

Otoscopy: A hole (perforation) appears in the eardrum, and a pulsating purulent discharge is visible.

Stage IV: Reparative (recovery) stage

Pathogenesis: Suppression of the inflammatory process, scarring of the perforation.

Clinic: The discharge of pus stops, it is gradually restored.

Otoscopy: The eardrum redness disappears, small perforations close, and some dullness or scarring may remain.

**Materials and methods:** Systemic therapy (at all stages):

Antibacterial therapy: Amoxicillin is recommended as an empirical first-line drug . Amoxicillin/clavulanate is prescribed if there is no response or a history of antibiotic use in the past month. In cases of penicillin allergy, cephalosporins (Cefuroxime, Cefixime) or macrolides (Azithromycin, Clarithromycin) are indicated.

**Methods:** Anti-inflammatory and analgesic: Nonsteroidal anti-inflammatory drugs (Ibuprofen, Paracetamol) are necessary to reduce pain and fever.

Deconstruction: One of the most important steps in the ear canal restoration clinic. For this purpose, nasal decongestant drops (Xylometazoline, Oxymetazoline) are prescribed for no more than 5-7 days.

**Results:** In the pre-perforation stage (stage II):

Local anesthesia: Osmotically active drops containing phenazone and lidocaine are instilled into the ear (after making sure there is no perforation!).

Tympanotomy (Paracentesis): If, despite adequate conservative treatment, severe pain persists for 24-48 hours, the tympanic membrane becomes swollen and signs of intoxication increase. This involves the timely course of the disease and its functioning.

**Conclusion.** The use of drops containing alcohol and ototoxic antibiotics (aminoglycosides: neomycin, gentamicin) is strictly prohibited , as they can penetrate the inner ear and cause deafness.

Ear hygiene: Regularly cleaning the ear canal of pus (using dry cotton swabs or a suction device).

Drops: Ear drops (Ciprofloxacin, Ofloxacin) from the group of fluoroquinolones that do not have ototoxic substances are used for local antibacterial action.

In the reparative stage (stage IV):

To fully restore the patency of the auditory tube, it is recommended to perform Politzer's blowing and pneumatic massage.

Change audiometry to determine if the eardrum is scarred and fully healed.

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