Pro Index | Journal of Science in Medicine and Life
Volume: 3 Issue: 1 Year: 2025
ISSN: 2992-9202 | http://journals.proindex.uz

Optimization of Conservative Treatment of Chronic Mesotympanitis

Elmurodov Doston
Samarkand State Medical University, Department of Otorhinolaryngology No. 2, 1st year clinical resident

Khayitov A. A.
Samarkand State Medical University, Department of Otorhinolaryngology No. 2, 1st year clinical resident

Abstract: Mesotympanitis is a variant of chronic purulent inflammation of the middle ear cavity, which is accompanied by perforation of the eardrum in the central part. The main symptoms of the disease are decreased hearing acuity, otorrhea, intoxication syndrome, a feeling of "throbbing" in the ear and various noises. The clinical picture is periodically supplemented by vestibular disorders and pain. Diagnosis consists of collecting anamnesis and complaints, conducting otoscopy, otoendoscopy, tuning-fork tests, audiometry, laboratory tests, computed tomography or magnetic resonance imaging. Treatment is based on antibiotic therapy, tympanoplasty and symptomatic measures.

Key points: Causes of mesotympanitis, Pathogenesis, Symptoms of mesotympanitis, Diagnostics, Treatment of mesotympanitis, Prognosis and prevention.

Mesotympanitis accounts for more than 50% of all forms of chronic suppurative otitis media (CSOM). The overall prevalence of the disease is from 2 to 35% of the world's population. In Russia, this pathology occurs with a frequency of 8.2 to 40.1 per 1000 people. From 6 to 8% of patients requiring hospitalization and treatment in a hospital setting suffer from CHSO. Mesotympanitis is a relatively benign form of the disease, since it is not accompanied by serious violations of bone structures. However, with a long course of the disease, more than 55% of patients develop caries of the auditory bones, and 20-23% develop lysis of the walls of the tympanic cavity. The mortality rate in case of complications is 15-25%.

Causes of mesotympanitis

The main reason for the development of mesotympanitis is the transition of acute exudative otitis media to a chronic form. In this case, the composition of the bacterial microflora changes slightly compared to the acute process, often the presence of several pathogens is detected at the same time; These are mainly aerobes Pseudomonas aeruginosa and Staphylococcus aureus, which are found in 50-85% of patients. In rare cases, anaerobic flora is detected, represented by gram-positive cocci (Peptococcus and Peptostreptococcus), Bacteroides or gram-negative Klebsiella and Proteus. In 2-15% of patients, fungi of the genera Aspergillus and Candida are detected.

- *Factors that contribute to chronic inflammation of the tympanic cavity and the development of mesotympanitis have been identified. These include:*

Diseases of the nasal cavity and nasopharynx. This group of pathologies includes tumors, adenoid growths, deformation of the nasal septum, and other conditions that disrupt the drainage function of the auditory tube, preventing the outflow of purulent masses from the tympanic cavity.

Anomalies of the structure of the maxillofacial region. The list includes choanal atresia, Down syndrome, cleft lip, and other defects that deform or block the lumen of the Eustachian tube.

Associated pathologies. First of all, this concerns diabetes mellitus, which reduces the resistance of local tissues and provides high activity of pathogenic microflora.

Immunodeficiency states. The absence of a systemic immune response leads to uncontrolled proliferation of flora, rapid development of complications, and generalization of infection. Such conditions include the final stages of cancer development, oncohematological pathologies, and AIDS.

Inadequate treatment of acute otitis media. Incorrectly selected antibacterial drugs, non-compliance with the dosage or an incomplete course of antibiotic therapy contribute not only to the transition of an acute disease to CGSO, but also to the development of drug resistance of the microflora.

Pathogenesis

The development of mesotympanitis is based on primary acute inflammation of the mucous membrane of the middle ear structures. In the future, mucopurulent formation occurs due to dysfunction of the auditory canal, unreasonable use of antibiotics, local and systemic immunodeficiency, or the accession of anaerobic microflora. The latter is a variant of middle ear damage, accompanied by hyperplasia of the lamina propria of the mucous membrane and hypersecretion of the integumentary epithelium of the tympanic membrane. Such pathological changes, combined with the high activity of pathogenic microflora and the toxic effect of its metabolic products, lead to purulent dissolution of the elongated part of the eardrum. In parallel, lytic enzymes, lymphokines, cytokines, and growth factors are released. This causes proliferation, differentiation, and migration of keratinocytes in the cholesteatoma matrix, leading to the formation of cholesteatoma, destruction of other bone structures.

Symptoms of mesotympanitis

Exacerbation of the disease usually occurs against the background of an acute viral infection, hypothermia, or water ingress into the ear canal. In most patients, the main symptom is a gradual unilateral hearing loss on the affected side. In some patients, with each repeated episode of mesotympanitis, hearing acuity gradually decreases. Exacerbation of chronic otitis is also indicated by the appearance of intoxication syndrome - an increase in body temperature to 39.0 ° C, chills, drowsiness, weakness, malaise, and a general aching headache.

With the further development of the disease, discharge from the ear appears, which can be of a different nature - from a small amount of mucus to a copious purulent odor. Otorrhea is often accompanied by a feeling of "fullness" in the ear, mild pain or discomfort against the background of increased perception of one's own voice. Many patients hear noise, the nature of which depends on the existing pathological changes. With a large defect in the eardrum, the noise is low-frequency, reminiscent of humming. If the inner ear is damaged, a high-frequency ringing, hissing or whistling occurs.

Approximately 10% of patients with mesotympanitis develop a labyrinthine fistula, which causes cochleovestibular disorders. These include dizziness of a rotational nature and impaired stability of varying severity. Symptoms usually occur with moderate physical activity, turning or tilting the head, less often at rest. A dull headache of otogenic origin is rare, which can be localized in the temporal, parietal or paraorbital region.

Complexities

All complications arising from mesotympanitis are usually divided into two main groups: intracranial and extracranial. The first includes meningitis, encephalitis, brain abscesses, etc. Their

development is associated with the spread of bacterial flora and purulent masses directly to the meninges as a result of the destruction of the upper wall of the tympanic cavity. The group of extracranial complications includes subperiosteal abscess, mastoiditis, labyrinthitis and facial nerve paresis. The mechanism of their development is also based on purulent melting of the walls of the middle ear, but with the involvement of the structures forming the orbit, mastoid process and the facial nerve or labyrinthine canal in the pathological process. In the latter case, profound sensorineural hearing loss often occurs in parallel. Against the background of immunodeficiency states, the risk of generalization of infection and the development of otogenic sepsis is high.

Diagnostics

The diagnosis of mesotympanitis is usually not difficult. This is facilitated by the characteristic clinical picture of the disease and the presence of specific changes, which are detected by routine diagnostic methods in otorhinolaryngology. A complete examination of the patient includes:

Analysis of complaints and anamnesis. In addition to conductive hearing loss and signs of otorrhea in the anamnesis, the patient almost always has a history of exacerbation of acute purulent otitis or mesotympanitis. The otolaryngologist also determines the presence of predisposing factors or diseases.

Otoscopy . The otoscopic picture in this variant of chronic otitis media is characterized by the presence of a hole in the elongated area of the eardrum from which pathological masses are released. General hyperemia, swelling of the edges of the perforation hole, and less often granulation growth are detected.

Otomicroscopy or otoendoscopy. The study allows you to see tympanosclerotic foci or petrification, tympanofibrosis, retraction pockets, mucous membranes, polypous changes in the mucous membranes, caries or purulent dissolution of the auditory ossicles, destruction of the attic and aditus, the development of cholesteatoma. .

Tuning fork study. During the Rinne test, a patient with mesotympanitis perceives the sound of a tuning fork louder when the stem is placed on the mastoid process. According to the results of the Weber test, the sound produced by the tuning fork is heard better by the affected ear. Changes in the test results indicate a concomitant lesion of the sound-receiving apparatus.

Pure tone threshold audiometry . With isolated damage to the eardrum and/or auditory ossicular chain, a progressive depression of the air conduction curve is observed on the audiogram. When the pathological process spreads to the labyrinth, damage to the sound perception system occurs, which is manifested by a parallel deterioration in bone perception of sound.

Laboratory tests. In a general blood test for mesotympanitis, an increase in the leukocyte level of more than 10×10^9 / l is determined by a shift of the leukocyte formula to the left and an increase in ESR. Bacterial inoculation of pathological masses isolated from the ear is performed and the sensitivity of the inoculated flora to antibiotics is determined.

Radiation research methods. Usually, computed tomography of the temporal bones is used, which allows you to visualize damage to the mucous membrane of the middle ear, the formation of scars near the auditory ossicles, the melting of the long stalk or body of the incus, and the upper structures of the stapes. . With complications, deformation and destruction of the walls of the tympanic cavity or the roof of the cave, fistulas of the facial nerve canal and labyrinths appear. MRI of the temporal bones is less often used for a detailed diagnosis of the cholesteatoma process and its differentiation from other pathological changes.

Treatment of mesotympanitis

The goal of therapy is to prevent intracranial and extracranial complications, to achieve stable remission by sanitizing the middle ear. The main method of treating mesotympanitis is surgery. Operations, of course, are supplemented by the appointment of medications. The therapeutic program includes the following measures:

Surgical intervention. Surgical tactics depend on the specific clinical situation. In most cases, tympanoplasty according to Wulstein is performed with prosthetics of the auditory ossicles, if necessary. If the risk of complications is high, an open sanitization operation with drainage of the cavity or atticoantromastoidotomy is performed.

Antibiotic therapy. Systemic and topical antibacterial drugs are used. Pharmacological agents are selected taking into account the sensitivity of pathogenic microflora. The main drugs are cephalosporins of the II-III generation, fluoroquinolones of the II generation, semi-synthetic penicillins. Given the simultaneous presence of several pathogens, a combination of 2-3 antibacterial agents is used.

Symptomatic treatment . Includes the use of local corticosteroids, rinsing the ear with antiseptic preparations, prescribing immunomodulators and vitamin preparations. In case of dysfunction of the auditory tube, it is inflated according to Politzer. If necessary, septoplasty, adenoidectomy and other operations are performed to restore drainage of the middle ear.

Prognosis and prevention

The prognosis for mesotympanitis is relatively favorable. If therapy is started in a timely manner, it is possible to restore hearing to its original level and prevent septic complications and sensorineural hearing loss. With intracranial spread of purulent masses, the outcome depends on the results of the treatment of complications. Prevention of mesotympanitis includes a full rational treatment of the acute form of purulent otitis media, strengthening the body's general defenses, timely normalization of the Eustachian tube, removal of adenoid growths, and correction of other predisposing factors.

Symptoms are mainly determined by the type of fungus and the clinical form of the disease. The first manifestations of mycotic lesions are non-specific. Most often, these are itching, dryness or burning in the nasal cavity or paranasal sinuses, which can last from several hours to 1-2 days. With invasive mycoses, they are quickly supplemented by various intoxication syndromes. Initially, this symptom manifests itself as the inability to understand the words of the interlocutor in the presence of external noise: the operation of a car engine, other people's conversations, street noise, etc. Then perception worsens even without external stimuli. At the same time, a symmetrical decrease in hearing acuity occurs unnoticed by the person. Next comes.

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