Acute purulent otitis media etiopatogenesis and clinical manifestation

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Abstract: Inflammatory diseases of the ear are one of the most urgent problems in otorhinolaryngology. Among outpatient patients, the proportion of patients with various forms of otitis media reaches 34%. Acute otitis media is one of the most common diseases, mainly occurring in childhood. Already in the first year of life, acute otitis media is suffered once by 48-62% of children, by 3 years - 71%, and by 7 years - 95%. Acute otitis media is more common in children, especially in infancy, which is associated with anatomical features and imperfection of the function of the auditory tube. Low birth weight, prematurity, family history of allergies, and low social status are likely risk factors, but their role in the development of acute otitis media has not yet been reliably proven.

Keywords: Acute purulent otitis media, infections, inflammation, mucous membranes of the tympanic cavity, mucopurulent discharge.

Acute purulent otitis media (otitis media purulenta acuta) is an acute purulent inflammation of the mucous membrane of the tympanic cavity, in which all parts of the middle ear are involved to some extent in catarrhal inflammation. This is a fairly widespread disease of the middle ear, which can occur either in a mild form, or, rapidly developing, cause a severe general inflammatory reaction of the body. However, in both cases, it often leaves behind an adhesive process, accompanied by hard-to-treat hearing loss, or passes into a chronic, often progressive form, also leading to hearing loss and often to serious complications. Acute suppurative otitis media Acute otitis media is especially common in children under 3 years of age. A distinctive feature of this disease is currently a less acute onset and a sluggish course, and in childhood - a tendency to relapse.

Etiology. The cause of the disease is a combination of factors such as a decrease in local and general resistance and infection in the tympanic cavity. Through the auditory tube, microflora often enters the tympanic cavity, saprophytizing in the pharynx, but this does not cause inflammation if local and general reactivity is normal. If the intake of microflora was massive or it was highly virulent even in a small amount, acute otitis media occurs, as well as in the case of a small ingestion of saprophytic microflora with reduced reactivity. In the structure of acute otitis media,

the etiological factor in 43.5% is S.pneumoniae, in 40.3% - Hinfluenzae, in 7.1% - S.pyogenes, in 5.8% - M.catarrhalis, Staphylococcus spp. - in 3.3%. The main causative agents of acute otitis media in adults and children are S. pneumoniae and H. influenzae, somewhat less often M. catarrhalis, S. pyogenes, S. aureus, or associations of microorganisms. Viral otitis is more often observed in epidemics of viral diseases.

The most common route of infection is tubogenic - through the auditory tube. Usually, there is no microbial flora in the cavities of the middle ear, which is explained by the barrier function of the mucous membrane of the auditory tube. Mucus is produced here, which has an antimicrobial effect, and the villi of the ciliated epithelium constantly move the mucous secretion towards the nasopharynx. With various common infectious diseases, local acute exacerbations and chronic, inflammatory diseases of the upper respiratory tract, the protective function of the epithelium of the auditory tube is disturbed, and the microflora penetrates into the tympanic cavity. Less often, the infection enters the middle ear through a damaged tympanic membrane when it is injured or through a mastoid wound. In this case, we speak of traumatic otitis media. A relatively rare third way of infection in the middle ear is hematogenous. It is possible with such infectious diseases as influenza, scarlet fever, measles, typhus, tuberculosis, etc. In extremely rare cases, acute otitis media develops as a result of a retrograde spread of infection from the cranial cavity or labyrinth.

Pathogenesis. Acute otitis media begins with inflammation of the mucous membrane of the auditory tube and tympanic cavity. In this case, there is swelling of the mucous membrane and its neutrophilic leukocyte infiltration. The mucous membrane of the tympanic cavity is very thin - 0.1 mm and is a mucoperiost, so the inflammatory reaction is in the nature of mucoperiostitis. As a result of a sharp violation of the function of the auditory tube, the middle ear is filled with exudate, which at first can be serous, and then becomes purulent. The mucous membrane becomes significantly thickened, erosions and ulcerations appear on its surface. At the height of inflammation, the tympanic cavity is filled with exudate, granulations and a thickened mucous membrane. When the drainage function of the auditory tube is impaired, this leads to the outward bulging of the eardrum. As a result of strong pressure of purulent exudate and circulatory disorders, melting of some area often occurs and perforation of the eardrum, followed by otorrhea.

Abundant at first, mucopurulent discharge gradually becomes thick, purulent, and as the inflammation subsides, their number decreases and suppuration completely stops. After this, the perforation of the eardrum may heal, but the congestion of the ear persists for some time. The criterion for recovery is the normalization of the otoscopic picture and complete restoration of hearing**.**

Clinical manifestation. In typical cases, acute purulent otitis media is characterized by a staging course. Local and general symptoms of the disease are expressed differently depending on the stage and severity of the process. There are three stages of acute suppurative otitis media:

• preperforative;
• perforative;
• reparative.

It should be noted that not in all cases the process necessarily goes through all three stages. As a result of the mobilization of sufficient natural defenses of the body and with timely intensive therapy, the disease can acquire an abortive course already at the first stage.

The initial, preperforative, stage of the disease is characterized by pronounced local and general symptoms. The leading complaint is pain in the ear, often very sharp, radiating to the temple, crown. Steadily growing, it sometimes becomes painful, unbearable. Pain occurs as a result of inflammatory infiltration of the mucous membrane of the tympanic cavity and the accumulation of exudate in it; in this case, irritation of the receptor endings of the branches of the trigeminal and glossopharyngeal nerves occurs. Sometimes there is pain on palpation and percussion of the mastoid process, which is due to inflammation of its mucous membrane. At the same time, congestion, noise in the ear occurs as a result of inflammation and limitation of mobility of the tympanic membrane and the ossicular chain. Objectively, there is a conductive hearing loss with a slight deterioration in bone conduction of sound. With influenza otitis, as well as measles and scarlet fever, the inner ear is sometimes involved in the process, which is manifested by a more significant impairment of sound perception.

During this period, the general condition of the patient is often disturbed - signs of intoxication appear, body temperature rises to 38-39 ° C, and shifts characteristic of the inflammatory process are detected in the peripheral blood. Otoscopy first shows an injection of vessels along the handle of the malleus and radial vessels of the membrane, accompanied by a shortening of the light cone. Then the hyperemia of the tympanic membrane increases, becomes diffuse, its identification points disappear, the membrane protrudes, becomes infiltrated, sometimes covered with a whitish coating. The duration of the initial stage of acute otitis media is from several hours to 2-3 days. Signs of this stage can be expressed differently - from obvious to imperceptible, however, the main symptom - hyperemia of the tympanic membrane - is always present.

The perforative stage is characterized by perforation of the eardrum and the appearance of suppuration. At the same time, the pain in the ear quickly subsides, the patient's well-being improves, and the body temperature decreases. The discharge

from the ear is at first copious, mucopurulent, sometimes with an admixture of blood. During otoscopy, the so-called pulsating reflex can be observed, when pus is viewed through perforation and pulsates synchronously with the pulse. A pulsating light reflex appears when a beam of light is reflected, which falls on a drop of the separated, which is in the perforation. Such a pulsation is associated with a pulsation of the blood-filled mucous membrane, in contrast to the same light reflex in chronic purulent destructive otitis media, where dura mater is the cause of the pulsation.

Sometimes the thickened mucosa of the tympanic cavity prolapses through the perforation of the tympanic membrane in the form of a formation resembling granulation. After a few days, the amount of discharge decreases, they become thick and acquire a purulent character. Suppuration usually lasts 5-7 days. Perforation in acute otitis media is usually small, round with a defect in the membrane. Slit-like perforations without tissue defect are less common. More extensive perforations occur with scarlatinal, measles, tuberculous lesions.

The reparative stage is characterized not only by the cessation of suppuration and, in most cases, by spontaneous scarring of the perforation, but also by the restoration of hearing. Along with a gradual decrease, and then the cessation of secretions, hyperemia and infiltration of the tympanic membrane disappear, its luster appears, and identification contours become visible. Small perforations (up to 1 mm) close quite quickly, leaving no traces. With a large perforation, the middle fibrous layer at the site of the defect usually does not regenerate, and then, if the perforation still closes, the epidermal layer from the outside and the mucosa from the inside are restored. This area looks atrophic, has the appearance of tissue paper, sometimes there are deposits of lime salts. Perforations of a rounded shape with a pronounced tissue defect often do not close; at the same time, the mucous membrane of the membrane grows together with the epidermis along the edge and a persistent perforation with callused edges is formed. Fibrous adhesive changes after suffering otitis media often remain in the tympanic cavity itself, limiting the mobility of the auditory ossicles, which indicates an adhesive process, which in some cases can progress.

The typical course of acute purulent otitis media can be disturbed at any stage of the process. In some cases, the disease immediately takes on a sluggish, protracted character with mild general symptoms. Perforation of the tympanic membrane does not occur, and a viscous, thick secret accumulates in the tympanic cavity, which is difficult to evacuate. Following this, an adhesive process often develops in the tympanic cavity. Sometimes, on the contrary, in the first period, the course of the disease can be extremely severe, with high fever, severe headache, vomiting, dizziness, and a sharp deterioration in the general condition. The cause of such a violent reaction is often a long-term non-approaching perforation of the tympanic

membrane in the presence of exudate in the middle ear. In some cases, even before perforation, the infection can spread from the middle ear into the cranial cavity with lightning speed and lead to severe intracranial complications and even death.

In some patients, despite the perforation of the tympanic membrane, the temperature does not decrease and the patient's condition does not improve. Such a course of the process is usually associated with the active development of inflammation in the mastoid process, i.e. the appearance of mastoiditis.

Sometimes, in the normal course of the disease after perforation of the tympanic membrane, when the patient's condition has already improved and the temperature has returned to normal, the temperature rises again, pain in the ear appears. Such a clinical picture indicates a violation of the outflow and retention of pus in the cavities of the middle ear and may be the result of the formation of granulations in the mucous membrane, which create conditions for stagnation of exudate in the tympanic cavity, or this is associated with the onset of mastoiditis.

Suppuration that does not stop for a long time (3-4 weeks), when, after cleaning the ear, pus fills the ear canal again, indicates an empyema of the mastoid process - mastoiditis, in which its bone bridges usually melt. Sometimes profuse suppuration, Acute medium especially with a pulsation of pus, is a sign of an extradural abscess.

In the usual course of acute otitis media, changes in the peripheral blood are manifested by moderate leukocytosis without a pronounced shift of the formula to the left, a mild increase in ESR. In a severe disease, pronounced leukocytosis is observed, sometimes up to 20.0x109/l and higher with a noticeable shift to the left. These changes, sometimes combined with the disappearance of eosinophils, are an unfavorable sign, Acute medium especially in the advanced stage of the disease, when they may indicate the development of a complication or the possible spread of infection into the cranial cavity.

The duration of the disease usually does not exceed 2-3 weeks. The complicated course and unfavorable outcomes of acute purulent otitis media may be due to a decrease in local and general immune defense of the body, high virulence of the pathogen and its resistance to the antibiotics used, and irrational therapy of the disease.

References

1. Кунельская В. Я., Шадрин Г. Б., Рассказова Т. В., Калинина И. Б. Средний отит. Роль бактериальной и грибковой инфекции // МС. 2013. №7.

2. Lutfullaev G. et al. Exudative Otitis Media-Early Symptom of Junior Nasopharyngeal Angiofibroma //Annals of the Romanian Society for Cell Biology. – 2021. – С. 111-114.

3. Кочетков Петр Александрович, Косяков Сергей Яковлевич, Лопатин Андрей Станиславович Острый средний отит // Практическая пульмонология. 2005. №4.

4. Rovers M. M. et al. Otitis media //The lancet. – 2004. – Т. 363. – №. 9407. – С. 465-473.

5. Utkurovna S. G., Farkhodovna K. F., Orifjonovna O. F. FEATURES OF IMMUNE MECHANISMS IN THE DEVELOPMENT OF PATHOLOGICAL PROCESSES //Достижения науки и образования. – 2022. – №. 2 (82). – С. 108-115.

6. РУСТАМОВА Г. Р., САМИЕВА Г. У. ОСОБЕННОСТИ КЛИНИЧЕСКОГО ТЕЧЕНИЯ И ЛЕЧЕНИЯ ХРОНИЧЕСКОГО ТОНЗИЛЛИТА У ДЕТЕЙ //ЖУРНАЛ БИОМЕДИЦИНЫ И ПРАКТИКИ. – 2022. – Т. 7. – №. 3.

7. Karabaev H. E., Nasretdinova M. T. Diagnostics of auditory function in patients with herpes virus infection //Science and Innovations in Medicine. – 2018. – Т. 3. – №. 1. – С. 51-54.

8. Safoeva Z. F., Utkurovna S. G. DYSBIOTIC UPPER AIRWAY DISORDERS IN CHILDREN WITH ACUTE STENOTIC LARYNGOTRACHEITIS LARYNGOTRACHEITIS //World Bulletin of Public Health. – 2022. – Т. 11. – С. 1-4.

9. Lutfullaev G. U. et al. Audiological Indicators of Exudative Otitis Media in Benign Neoplasms of the Nose, Paranasal Sinuses and Nasopharynx //INTERNATIONAL JOURNAL OF HEALTH SYSTEMS AND MEDICAL SCIENCES. – 2022. – Т. 1. – №. 4. – С. 312-316.

10. Samieva G. U. State of microbial landscape of upper respiratory tract in children with acute stenosing laryngotracheitis //European Medical, Health and Pharmaceutical Journal. – 2015. – Т. 8. – №. 1.

11. Safoyeva Z. F., Samiyeva G. U. RESPIRATORY TRACT MICROBIOCENOSIS DISORDERS IN CHILDREN WITH ACUTE STENOTIC LARYNGOTRACHEITIS //Академические исследования в современной науке. – 2022. – Т. 1. – №. 15. – С. 43-44.

12. Samieva G. U. et al. Features Of Distribution And Density Of Lymphoid Cells Of The Mucosa Of The Larynx As A Manifestation Of Local Immunity In Chronic Laringitis (Analysis Of Sectional Material) //European Journal of Molecular & Clinical Medicine. – 2020. – Т. 7. – №. 03. – С. 2020.

13. Bluestone C. D., Stephenson J. S., Martin L. M. Ten-year review of otitis media pathogens //The Pediatric infectious disease journal. – 1992. – Т. 11. – №. 8 Suppl. – С. S7-11.

14. Abdirashidov A., Abdirashidova G. ПРИБЛИЖЕННОЕ РЕШЕНИЕ НЕКОТОРЫХ ЛИНЕЙНЫХ ДИФФЕРЕНЦИАЛЬНЫХ УРАВНЕНИЙ С

ЗАПАЗДЫВАЮЩИМ АРГУМЕНТОМ В МЕДИЦИНЕ //Theoretical & Applied Science. – 2019. – №. 12. – С. 18-22.

15. Gulnoza S., Gulnoza A., Golib K. Pathogenetic aspects of endogenous intoxicationand its influence on the course of various forms of stenotic laryngotracheitis in children //European science review. – 2018. – №. 9-10-2. – С. 155-157.