

OTITIS: TYPES, CAUSES, DIAGNOSIS, TREATMENT METHODS

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Abstract: Acute otitis media is one of the most common diseases in children and adults and the most common reason for prescribing antibiotic therapy, which is often unfounded. 20–70% of respiratory infections in adults and children are complicated by the development of acute otitis media. Although only 10% of acute otitis media is of viral etiology, the vast majority of acute otitis media is also a viral-bacterial coinfection. The article presents the main pathogenetic mechanisms of development of acute otitis media, such as viral and virus-induced. The term “otopathogenic microorganisms” was introduced. A review of the most common pathogens of acute otitis media – viral and bacterial – is presented. An otomicroscopic picture is described based on the generally accepted Russian classification of acute otitis media.

Keywords: Respiratory viruses, acute otitis media, tympanogram, viral otitis, viral-bacterial interactions.

INTRODUCTION: Acute otitis media (AOM) is an inflammatory process involving the mucous membrane of the middle ear, eustachian tube and mastoid cells [1].

AOM is manifested by one or more characteristic symptoms: ear pain, fever, hearing loss. Children with AOM may experience agitation, irritability, vomiting, and diarrhea. The disease usually lasts no more than three weeks, but it is possible to develop prolonged or recurrent AOM, which can lead to permanent changes in the middle ear and hearing loss. The recurrent course of AOM leads to the development of chronic inflammatory pathology of the middle ear, to progressive hearing loss, causing disruption of speech formation and general development of the child. According to Russian literature, AOM of viral etiology occurs in 10% of cases [1].

MATERIALS AND METHODS

Acute viral respiratory tract infections can be caused by a variety of viruses. Rhinoviruses and coronaviruses (229E, OC43 and NL63) are the most common causes of inflammatory diseases of the respiratory tract. Other groups of viruses may have distinctive features, for example, respiratory syncytial virus (RSV) is a leading cause of severe bronchiolitis [4], requiring hospitalization in newborns and infants; Influenza viruses cause annual epidemics with potentially severe respiratory symptoms and complications. In addition, parainfluenza viruses are commonly associated with acute laryngitis. Relatively new respiratory viruses, such as human bocaviruses and metapneumoviruses, have also been shown to cause AOM in children [5]. Although human bocavirus type 1 causes primarily respiratory infections, viral shedding can persist in the naopharynx for a long period, so the general significance of this virus in respiratory infections is still unclear [3].

RESULTS AND DISCUSSION

Although AOM is often bacterial or viral bacterial coinfection, there is evidence that a respiratory virus alone, without bacterial coinfection, can cause AOM. Experimental studies in adults and chinchillas have shown that induced viral infection can lead to the development of AOM. K. Revai et al. reported that 10% of children with AOM had no detectable bacterial pathogens colonized in the nAOM pharynx, suggesting that these were cases of viral AOM [3]. Further evidence of viral AOM was that viruses or viral nucleic acids were found in the middle ear fluid of children with AOM in the absence of bacteria [4].

Statistics indicate that only 3 out of 10 children with acute respiratory disease suffer from AOM [2]. The incidence depends on many factors, including the type and quantity of the pathogen, environmental factors, exposure to cigarette smoke and day care, and individual genetic risks. Recurrence of AOM and/or susceptibility to otitis media are also associated with genetic predisposition.

Clinical manifestations of acute otitis media in young and middle-aged children are usually nonspecific: fever, ear pain, irritability, rubbing or pulling of the ear, sleep disturbance, concurrent other acute respiratory symptoms, vomiting or diarrhea.

A mandatory research method is otomicroscopy. In the case of AOM, there will be hyperemia, varying in intensity from moderate to pronounced, erasure of identification marks, turbidity of the membrane, lack of its movement, and bulging of the eardrum. Tympanometry is recommended as an additional research method [2]. This method of objectively assessing the compliance of the eardrum by recording the impedance of the middle ear is effective in diagnosing middle ear pathologies. According to the classification of J. Jerger and G. Liden et al. distinguish three main types of tympanograms and four additional ones. In AOM, the tympanogram corresponds to type "B" in the form of a flattened curve [3].

Because we are unable to quickly determine the etiology of every case of AOM, treatment of all cases is empirical. Currently, there is no specific antiviral therapy.

The main goals of treatment for AOM include relief of symptoms, prevention of complications, and normalization of hearing.

Currently, the standard, guideline-approved treatment for AOM is a course of antibiotics (amoxicillin) and analgesics. Placebo-controlled clinical trials demonstrate significant symptomatic relief when antibiotics are used for 2–7 days, with a 13% improvement in overall clinical resolution [1, 4]. However, given the alarmingly high percentage of antibiotic resistance, one should resort to wait-and-see tactics and be guided by the individual AOM characteristics of a particular patient.

CONCLUSION: The doctor should achieve the most complete restoration of hearing and aeration of the cavities of the middle ear, since at this stage there is a high risk of transition from an acute condition to a chronic one, especially in children with recurrent otitis media.

Success in reducing the incidence of AOM will depend primarily on preventing colonization of the nAOM pharynx by otopathogens, as well as reducing the incidence of viral infections. The basis for the prevention of AOM according to the recommendations is vaccination against pneumococcus, *Haemophilus influenzae* and influenza virus.

REFERENCES:

1. Karneeva O.V., Polyakov D.P., Gurov A.V., Ryazantsev S.V., Maksimova E.A., Kazanova A.V. Acute otitis media. Clinical guidelines of the National Medical Association of Otolaryngologists. KR314. 2016. Access mode: <http://glav-otolar.ru/assets/images/docs/clinical-recomendations/KR314%20Ostryj%20srednij%20otit.pdf>.
2. Chonmaitree T., Revai K., Grady J.J., Clos A., Patel J.A., Nair S., Fan J., Henrickson K.J. Viral upper respiratory tract infection and otitis media complication in young children. Clin Infect Dis. 2018;46(6):815–823. doi:10.1086/528685.
3. Kalu S.U., Ataya R.S., McCormick D.P., Patel J.A., Revai K., Chonmaitree T. Clinical spectrum of acute otitis media complicating upper respiratory tract viral infection. Pediatr Infect Dis J 2011;30(2):95–99. doi: 10.1097/INF.0b013e3181f253d5.
4. Buchman C.A., Brinson G.M. Viral Otitis Media. Current Allergy and Asthma Reports. 2003;3:335–340. doi:10.1007/s11882-003-0094-6.

5. Chonmaitree T., Trujillo R., Jennings K., Alvarez-Fernandez P., Patel J.A., Loeffelholz M.J. et al. Acute Otitis Media and Other Complications of Viral Respiratory. *Infection Pediatrics*. 2016;137(4):e20153555. doi: 10.1542/peds.2015-3555.