

## Origin, Treatment and Prevention of Acute Otitis Media in Children in Modern Interpretation

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**Abstract:** Acute otitis media is an inflammatory process localized in the cavities of the middle ear. The disease is manifested by one or more characteristic symptoms: ear pain, fever, discharge from the ear, hearing loss, and in children - agitation, irritability, vomiting, diarrhea. According to statistics, acute otitis media (AOM) is one of the most common reasons for visiting a doctor and prescribing antibiotics in children.

**Key words:** Diagnosis of acute otitis media in children is sometimes not an easy task, due to the non-specificity of complaints and examination data.

In 2/3 cases, AOM is caused by a combined bacterial-viral infection. The most common bacterial pathogens include *S. pneumoniae*, nontypeable, *H. influenzae*, and *Moraxella catarrhalis*. The use of PCR technology made it possible to identify viral pathogens of the disease: respiratory syncytial virus, picornoviruses, coronaviruses, and influenza viruses.

In young children, symptoms such as fever, anxiety, headache, apathy, sleep disturbance, nausea, diarrhea and refusal to eat are observed. Fever is observed in about half, an increase in body temperature above 40C is not characteristic of an uncomplicated course of the disease.

Ear pain is a common but not mandatory symptom of otitis media and is more common in older children.

Examination is the most important step in the diagnosis of acute otitis media. Before conducting the examination, the condition of the external auditory canal and auricle is assessed. Often, the eardrum is partially visible due to the blockage of the external auditory canal by serum. Swelling of the eardrum is

an important symptom of acute otitis media. In severe cases of the disease, the eardrum can look like a donut: the edges are clearly bulging due to the accumulation of pus with the edge center.

Changes in the color and transparency of the eardrum should also be evaluated by a doctor during an otoscopy. Redness of the eardrum is not only a sign of inflammation, but can also be interpreted as a reactive phenomenon due to the baby's crying or increased body temperature. Other signs that may be detected during otoscopy include fluid levels, air bubbles, or a decrease in the transparency of the eardrum. These symptoms are not specific and can be observed in some other diseases.

The interpretation of the results of the examination of the patient largely depends on the experience of the doctor and the technical characteristics of the optical equipment used.

### **Instrumental inspection methods**

Instrumental methods for diagnosing acute otitis media include pneumatic otoscopy and tympanometry. Both of these methods are equally used in outpatient settings. In patients with bulging eardrum, especially in children, instrumental examinations are not required if the manipulation is too painful.

### **Treatment**

Ear pain in children with acute otitis can be very strong, so pain relievers should be prescribed. It is recommended to use analgesics from the NSAID group, in particular, ibuprofen and acetaminophen. Local anesthetics such as lidocaine, procaine, and benzocaine can be used in children older than 2 years. These drugs are not recommended for young patients due to possible side effects.

It is worth noting that the use of heating and cooling substances, oils and plant extracts is not recommended for the treatment of acute otitis media.

### **There are two main concepts in the literature regarding antibiotic therapy for acute otitis media:**

- 1) immediate treatment;
- 2) dynamic observation for 48-72 hours.

The choice of tactics depends on the age of the patient and the severity of the disease and should be chosen together with the attending physician.

Amoxicillin is the drug of choice for the treatment of acute otitis media in children who have not used antibiotics in the last month. The recommended dose of amoxicillin is 90 mg/kg of body weight divided into 2 doses. The duration of therapy varies from 5 to 10 days. A ten-day course is recommended for children under 2 years of age with eardrum perforation and recurrent otitis media. In children over 2 years old, with normal immunity, unperforated eardrum and a mild course of the disease, treatment can begin with dynamic observation. It should be noted that dynamic monitoring implies the need for

antibacterial therapy in the absence of positive dynamics within 48-72 hours or when the patient's condition worsens. Vasoconstrictor nasal drops are not recommended in the treatment of AOM due to lack of efficacy.

### **Prevention**

Some studies show that breastfeeding is associated with an increased risk of acute otitis media in children. It is possible that GV prevents the colonization of the nasopharynx by pathogenic flora. Studies have confirmed that the nasopharyngeal microflora of bottle-fed children is filled with colonies of pathogenic microorganisms. Secretory immunoglobulins present in milk, as well as the active work of muscles during breastfeeding, may play an additional role.

### **Vaccination.**

In some cases, patients may be recommended vaccination to prevent repeated otitis media. This strategy will be discussed together with the attending physician. However, it should be noted that the use of influenza virus and pneumococcal vaccines is associated with a slight decrease in the incidence of acute otitis media.

### **Antibiotic prophylaxis.**

The decision on antibiotic prophylaxis should be made based on the analysis of a complex of factors in each specific case. Prophylactic use of antibiotics helps to reduce episodes of otitis media during the period of its use. Indications for therapy include repeated otitis media, early onset of the disease (up to 6 months) and family history. Negative consequences of antibiotic prophylaxis include colonization of the nasopharynx with antibiotic-resistant strains.

The decision on the need to perform a bypass operation should be made taking into account the individual characteristics of the patient, as well as the possible risks of this procedure. When deciding to perform this surgical intervention, it should be taken into account that bypass surgery is not recommended if there is an exudate in the tympanic cavity for less than 3 months from the date of diagnosis.

Precautions to keep water out of the ear canal—use earplugs, avoid water sports—may not apply to children with shunt surgery.

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