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CONTEMPORARY APPROACHES TO THE TREATMENT OF ACUTE SUPPURATIVE OTITIS MEDIA IN CHILDREN WITH ALLERGIC DIATHESIS: A LITERATURE REVIEW

СОВРЕМЕННЫЕ ПОДХОДЫ К ЛЕЧЕНИЮ ОСТРОГО ГНОЙНОГО СРЕДНЕГО ОТИТА У ДЕТЕЙ С АЛЛЕРГИЧЕСКИМ ДИАТЕЗОМ: ОБЗОР ЛИТЕРАТУРЫ

АЛЛЕРГИК ДИАТЕЗИ БЎЛГАН БОЛАЛАРДА ЎТКИР ЙИРИНГЛИ ЎРТА ОТИТНИ ДАВОЛАШНИНГ ЗАМОНАВИЙ ЁНДАШУВЛАРИ: АДАБИЁТЛАР ШАРҲИ

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Abstract. Acute suppurative otitis media remains a common inflammatory disease in children, requiring careful selection of therapeutic strategies according to clinical severity, otoscopic findings, and the risk of complications. The coexistence of allergic predisposition and upper respiratory tract disorders may complicate clinical assessment and raise questions regarding the appropriate use of antimicrobial and antiallergic medications. This literature review analyzed contemporary evidence on the effectiveness and safety of treatment strategies for pediatric acute otitis media, with particular attention to children with allergic diathesis. Evidence from randomized controlled trials, systematic reviews, meta-analyses, and international clinical guidelines was examined. A Cochrane review including 13 randomized trials and 3,401 children demonstrated that antibiotics reduced persistent otalgia at 2–3 days (RR=0.71; 95% CI 0.58–0.88), but did not provide a clear benefit during the first 24 hours (RR=0.89; 95% CI 0.78–1.01). Antibiotic treatment reduced the risk of tympanic membrane perforation (RR=0.43; 95% CI 0.21–0.89) and abnormal tympanometry at 2–4 weeks (RR=0.83; 95% CI 0.72–0.96), although adverse events occurred more frequently (RR=1.38; 95% CI 1.16–1.63). International recommendations emphasize adequate analgesia, selective antibiotic prescribing, and regular clinical reassessment. Evidence supporting the routine use of antihistamines and decongestants for acute otitis media remains insufficient. Allergic comorbidities should therefore be managed according to their independent clinical indications.

Keywords: acute suppurative otitis media, children, allergic diathesis, antibiotic therapy, allergic rhinitis, clinical recovery, treatment effectiveness, tympanic membrane, evidence-based treatment.

Аннотация. Острый гнойный средний отит остаётся распространённым воспалительным заболеванием детского возраста, требующим дифференцированного выбора лечебной тактики с учётом тяжести клинического течения, отоскопических изменений и риска развития осложнений. Сочетание аллергической предрасположенности с заболеваниями верхних дыхательных путей может затруднять клиническую оценку состояния пациентов и определение показаний к применению антибактериальных и противоаллергических лекарственных средств. В настоящем обзоре литературы проанализированы современные научные данные об эффективности и безопасности различных методов лечения острого среднего отита у детей с особым вниманием к пациентам с аллергическим диатезом. Изучены результаты рандомизированных контролируемых исследований, систематических обзоров, метаанализов и международных клинических

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рекомендаций. Согласно систематическому обзору Cochrane, включавшему 13 рандомизированных исследований с участием 3401 ребёнка, применение антибиотиков снижало риск сохранения оталгии на 2–3-и сутки (RR=0,71; 95% ДИ 0,58–0,88), тогда как в первые 24 часа убедительного терапевтического преимущества не установлено (RR=0,89; 95% ДИ 0,78–1,01). Антибактериальная терапия способствовала снижению риска перфорации барабанной перепонки (RR=0,43; 95% ДИ 0,21–0,89) и частоты патологических тимпанометрических изменений через 2–4 недели (RR=0,83; 95% ДИ 0,72–0,96), однако сопровождалась увеличением частоты нежелательных реакций (RR=1,38; 95% ДИ 1,16–1,63). Международные клинические рекомендации подчёркивают необходимость адекватного обезболивания, обоснованного назначения антибиотиков и регулярной повторной оценки клинического состояния пациентов. Доказательная база, подтверждающая целесообразность рутинного применения антигистаминных и деконгестантных препаратов при остром среднем отите, остаётся недостаточной. Лечение сопутствующих аллергических заболеваний должно проводиться с учётом самостоятельных клинических показаний.

Ключевые слова: острый гнойный средний отит, дети, аллергический диатез, антибактериальная терапия, аллергический ринит, клиническое выздоровление, эффективность лечения, барабанная перепонка, доказательная медицина.

Аннотация. Ўткир йирингли ўрта отит болалар орасида кенг тарқалган яллиғланиш касалликларидан бири бўлиб, уни даволаш тактикасини танлашда касалликнинг клиник оғирлик даражаси, отоскопик ўзгаришлар ва асоратлар ривожланиш хавфини ҳисобга олиш талаб этилади. Аллергик мойилликнинг юқори нафас йўллари касалликлари билан бирга учраши беморларнинг клиник ҳолатини баҳолашни ҳамда антибактериал ва аллергияга қарши дори воситаларини қўллашга кўрсатмаларни аниқлашни мураккаблаштириши мумкин. Мазкур адабиётлар шарҳида болаларда ўткир ўрта отитни даволашнинг турли усуллари самарадорлиги ва хавфсизлигига оид замонавий илмий маълумотлар таҳлил қилиниб, аллергик диатези бўлган беморларга алоҳида эътибор қаратилди. Рандомизацияланган назоратли тадқиқотлар, тизимли шарҳлар, мета-таҳлиллар ва халқаро клиник тавсиялар натижалари ўрганилди. 3401 нафар бола иштирок этган 13 та рандомизацияланган тадқиқотни қамраб олган Cochrane тизимли шарҳига кўра, антибиотикларни қўллаш касалликнинг 2–3-кунларида қулоқ оғриғининг сақланиб қолиш хавфини камайтирган (RR=0,71; 95% ишонч оралиғи 0,58–0,88), бироқ дастлабки 24 соат давомида уларнинг аниқ терапевтик устунлиги тасдиқланмаган (RR=0,89; 95% ишонч оралиғи 0,78–1,01). Антибактериал даволаш ноғора парданинг перфорацияси хавфини (RR=0,43; 95% ишонч оралиғи 0,21–0,89) ва 2–4 ҳафтадан кейин патологик тимпанометрик ўзгаришлар учраш частотасини (RR=0,83; 95% ишонч оралиғи 0,72–0,96) камайтирган, аммо ножўя реакциялар частотасининг ошиши билан кечган (RR=1,38; 95% ишонч оралиғи 1,16–1,63). Халқаро клиник тавсияларда оғриқни етарли даражада бартараф этиш, антибиотикларни асосланган ҳолда буюриш ва беморларнинг клиник ҳолатини мунтазам қайта баҳолаш зарурлиги таъкидланган. Ўткир ўрта отитда антигистамин ва деконгестант препаратларни мунтазам қўллаш мақсадга мувофиқлигини тасдиқловчи илмий далиллар ҳозирча етарли эмас. Ҳамроҳ аллергик касалликларни даволаш мустақил клиник кўрсатмалар асосида амалга оширилиши лозим.

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Калит сўзлар: ўткир йирингли ўрта отит, болалар, аллергик диатез, антибактериал даволаш, аллергик ринит, клиник соғайиш, даволаш самарадорлиги, ноғора парда, далилларга асосланган тиббиёт.

Introduction. Acute otitis media is one of the frequently diagnosed inflammatory conditions in pediatric clinical practice and a common indication for antimicrobial treatment. The disease involves inflammatory changes in the middle ear mucosa, impaired ventilation through the Eustachian tube, and accumulation of inflammatory exudate within the tympanic cavity. Clinical manifestations include otalgia, fever, irritability, hearing impairment, and purulent otorrhea following spontaneous tympanic membrane perforation.

Although acute otitis media may resolve spontaneously, its clinical course varies according to age, disease severity, infectious etiology, and associated pathological conditions. Some children experience relatively rapid symptom resolution, whereas others develop persistent middle ear effusion, recurrent inflammatory episodes, or complications requiring specialist management.

The treatment of acute otitis media has evolved from routine antimicrobial prescribing toward differentiated therapeutic decision-making. Contemporary recommendations emphasize the importance of evaluating the severity of clinical manifestations, age, laterality, presence of otorrhea, and availability of subsequent medical observation.

Allergic predisposition introduces additional considerations into the management of pediatric middle ear disorders. Children with allergic rhinitis may experience nasal obstruction, nasopharyngeal mucosal inflammation, and Eustachian tube dysfunction. These changes can affect middle ear ventilation and contribute to persistent middle ear abnormalities. However, the relationship between allergy and otitis media is heterogeneous and differs according to the clinical phenotype of middle ear disease.

A systematic review published in 2020 emphasized that allergic disorders appear to be associated more consistently with otitis media with effusion and acute exacerbations of chronic middle ear effusion than with all forms of acute otitis media. More recent evidence has further supported an association between allergic rhinitis and otitis media with effusion, although causality remains uncertain.

The coexistence of acute middle ear infection and allergic disease therefore requires a clinically differentiated approach. Antibacterial treatment should be determined by the characteristics of the acute infection, while associated allergic disorders should be evaluated and treated according to their own diagnostic criteria.

An evidence-based assessment of antimicrobial effectiveness, symptomatic treatment, adverse reactions, and middle ear recovery is essential for rational management of this patient population.

Objective. To analyze contemporary evidence regarding the effectiveness, safety, and clinical indications of treatment strategies for acute suppurative otitis media in children with allergic diathesis and identify the principal criteria for differentiated therapeutic management.

Materials and Methods. A narrative literature review was conducted using published clinical trials, systematic reviews, meta-analyses, and clinical practice guidelines addressing the diagnosis and treatment of acute otitis media in children. Particular attention was given to the systematic review by Thompson et al. concerning the natural duration of symptoms in children, the 2023 Cochrane review by Venekamp et al. evaluating antibiotic therapy, and the 2025 Cochrane review by Darlison et al. concerning antihistamines and decongestants.

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Studies addressing allergic rhinitis, allergic sensitization, Eustachian tube dysfunction, and otitis media with effusion were also considered to clarify the clinical relevance and limitations of the relationship between allergy and middle ear disease.

The principal topics of analysis included spontaneous symptom resolution, antimicrobial effectiveness, immediate versus delayed antibiotic prescribing, adverse drug reactions, tympanic membrane perforation, persistent middle ear effusion, recurrent disease, and the role of antiallergic medications.

The review was descriptive and analytical. A new meta-analysis was not performed. Quantitative estimates were retained from the original publications and interpreted with consideration of study design, clinical outcomes, and limitations of the available evidence.

Results and Discussion

Natural course and duration of acute otitis media

The natural clinical course of acute otitis media is an important consideration when selecting treatment. A substantial proportion of uncomplicated episodes improve without immediate antimicrobial intervention.

Thompson et al. analyzed the duration of symptoms of common respiratory tract infections in children, including earache. Their systematic review included 23 randomized trials and 25 observational studies. The authors reported that earache resolved in approximately 90% of children within 7–8 days, indicating that symptoms may persist longer than expected during the first few days of illness.

The NICE guideline NG91 states that symptoms of acute otitis media generally last about three days, although they may continue for up to one week. Most children experience clinical improvement without antibiotic treatment.

These observations demonstrate that persistent symptoms during the early stage of illness do not necessarily indicate treatment failure. Nevertheless, deterioration of the clinical condition, severe systemic manifestations, or signs of complications require prompt reassessment.

The variability in recovery intervals supports the need for differentiated follow-up rather than routine escalation of treatment during the earliest period of illness.

The management of pain deserves particular attention. Adequate analgesia with age-appropriate paracetamol or ibuprofen is recommended for children with acute otitis media, including those receiving antimicrobial treatment.

Effectiveness of antimicrobial therapy

Antibiotics remain an important component of treatment in selected children with acute otitis media, particularly in cases characterized by severe symptoms, otorrhea, or increased risk of complications.

However, the magnitude of antimicrobial benefit varies according to the timing of assessment and the clinical outcome.

Venekamp et al. conducted a Cochrane systematic review of antibiotic treatment in children with acute otitis media. The analysis included 13 randomized trials involving 3,401 children and 3,938 episodes of the disease.

Antibiotic treatment did not significantly reduce persistent pain within the first 24 hours. At 2–3 days, antibiotics decreased the relative risk of persistent otalgia by approximately 29%, although the absolute benefit was modest.

At 2–3 days, the number needed to treat for one additional child to benefit was 20. This finding indicates that although antibiotics reduced the likelihood of persistent pain, a substantial proportion of children recovered without requiring immediate antimicrobial treatment.

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At 10–12 days, a larger relative reduction in persistent pain was reported, although this estimate was based on a single trial involving 278 children.

The frequency of treatment-related adverse events increased among antibiotic-treated patients. The relative risk reached 1.38, and the number needed to treat for one additional harmful outcome was 14.

Consequently, the expected benefits of antibiotic therapy should be balanced against its potential adverse effects.

Immediate antibiotic treatment and expectant observation

An important issue in pediatric practice is the selection between immediate antimicrobial treatment and expectant observation.

The 2023 Cochrane review included six trials involving 1,556 children in which immediate antibiotic prescribing was compared with an observation strategy, including delayed antibiotic prescribing.

Immediate antibiotics reduced persistent pain at 2–3 days, but differences at later time points were less certain. Adverse drug reactions occurred more frequently in children receiving immediate antibiotic treatment.

Immediate antibiotic administration was associated with a 47% relative reduction in persistent pain at 2–3 days in the relevant trial. However, the risk of vomiting, diarrhea, or rash increased considerably.

These findings support selective use of antibiotics rather than their universal prescription for uncomplicated disease.

The AAP and NICE recommendations differ in some details of age-based and symptom-based treatment selection, but both emphasize the importance of clinical severity, complications, and careful reassessment.

Expectant observation may be appropriate for selected children with non-severe symptoms when follow-up is reliable. Severe disease, significant systemic illness, and otorrhea require more active clinical evaluation and often prompt antimicrobial treatment.

Middle ear recovery and prevention of complications

The effectiveness of treatment should be assessed not only by early symptom resolution but also by the subsequent condition of the middle ear.

After acute symptoms subside, some children may retain middle ear effusion or abnormal tympanometric findings. These changes do not necessarily indicate persistent bacterial infection and should be distinguished from treatment failure.

In the Cochrane review, antibiotics reduced the risk of abnormal tympanometry at 2–4 weeks, but no clear reduction was demonstrated at 6–8 weeks or three months.

Antibiotics also reduced the relative risk of tympanic membrane perforation and contralateral otitis media episodes. However, no clear reduction in late recurrence was demonstrated.

The findings suggest that antimicrobial therapy may provide short-term benefits in selected clinical outcomes, whereas its influence on long-term middle ear recovery is less consistent.

Clinical monitoring should therefore include evaluation of tympanic membrane integrity, persistence of middle ear effusion, and hearing complaints.

Children with persistent hearing impairment, recurrent episodes, or suspected complications require further otolaryngological assessment.

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Allergic predisposition and middle ear inflammation

The relationship between allergic disease and middle ear pathology is complex. Allergic rhinitis may contribute to nasal mucosal edema, Eustachian tube dysfunction, and changes in middle ear ventilation.

Nevertheless, the strength of the association differs between acute otitis media and otitis media with effusion.

A systematic review examining different phenotypes of pediatric otitis media concluded that allergic conditions were more consistently associated with otitis media with effusion and acute exacerbations involving pre-existing middle ear effusion.

A systematic review and meta-analysis published in 2026 by Petre et al. examined allergic rhinitis, allergic sensitization, and pediatric otitis media with effusion. The primary quantitative analysis demonstrated an association between allergic rhinitis and otitis media with effusion (OR=3.73; 95% CI 1.79–7.74). An exploratory analysis of allergic sensitization also suggested an association, although substantial heterogeneity and a limited number of studies restricted the certainty of interpretation.

These findings are relevant to the assessment of children with allergic diathesis but should not be extrapolated directly to acute suppurative otitis media. Otitis media with effusion and acute suppurative otitis media represent different clinical conditions.

Allergic predisposition may be considered an accompanying factor in selected patients, whereas the diagnosis and treatment of an acute suppurative infection must remain based on the characteristics of the infectious process.

Antihistamines and decongestants in pediatric otitis media

The coexistence of allergic predisposition and acute otitis media often raises questions concerning antihistamine and decongestant treatment.

However, these medications should not be routinely prescribed solely for the treatment of acute otitis media.

The NICE guideline states that antihistamines and decongestants do not provide established symptomatic benefit in acute otitis media.

The 2025 Cochrane review by Darlison et al. assessed evidence concerning decongestants and antihistamines in children with acute otitis media. The authors concluded that the available evidence was very uncertain regarding both benefits and harms. No relevant new randomized trials had been published since 2003.

These results do not support the routine inclusion of antihistamines or decongestants in standard acute otitis media treatment regimens.

In children with confirmed allergic rhinitis, appropriate antiallergic treatment may be indicated for the control of nasal symptoms. However, this therapeutic objective should be distinguished from treatment of the acute middle ear infection.

Similarly, a history of allergic diathesis should not be interpreted as a contraindication to all antibiotics. Selection of antimicrobial agents should consider documented hypersensitivity to specific medications, previous treatment, and clinical indications.

Principles of differentiated therapeutic management

The reviewed evidence indicates that treatment selection should be based on a combination of clinical characteristics rather than a single standardized approach.

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Adequate analgesia is necessary during the acute symptomatic period. Systemic antimicrobial treatment should be considered according to age, disease severity, otorrhea, clinical stability, and risk of complications.

Children with mild disease who meet criteria for observation require reliable follow-up and clear instructions for reassessment if symptoms persist or worsen.

Persistent middle ear effusion after resolution of acute symptoms should not automatically lead to repeated antibiotic courses. Otoscopic follow-up, tympanometry, and hearing assessment may be indicated depending on the duration of abnormalities and the child's clinical condition.

For children with accompanying allergic rhinitis, management of nasal inflammation should follow established allergy guidelines. The presence of allergy does not independently justify broader-spectrum antimicrobial therapy or routine antihistamine treatment for acute otitis media.

The principal objective of differentiated management is to provide sufficient treatment for children likely to benefit while minimizing unnecessary medication exposure and adverse effects.

Limitations of the Available Evidence

The studies included in the reviewed literature differ in patient age, diagnostic criteria, disease severity, treatment regimens, and follow-up duration.

Much of the antimicrobial evidence was obtained from high-income countries. Its application to other healthcare settings requires consideration of local antimicrobial resistance patterns, access to follow-up, and differences in clinical practice.

Another limitation concerns the distinction between acute otitis media and acute suppurative otitis media. Many randomized trials included children with acute otitis media without requiring purulent otorrhea or tympanic membrane perforation. Accordingly, pooled treatment effects should not be interpreted as estimates specific to children with perforated suppurative disease.

Evidence on allergic predisposition primarily concerns otitis media with effusion rather than acute suppurative middle ear infection. Conclusions about the contribution of allergy to acute infectious disease therefore remain limited.

Finally, this article represents a narrative review rather than a newly conducted systematic review or meta-analysis. No pooled effect estimates were calculated independently.

Conclusion. Contemporary evidence indicates that acute otitis media in children frequently resolves without serious complications. Earache disappears in approximately 90% of children within 7–8 days, supporting the importance of adequate analgesia and clinical observation.

Antibiotic treatment reduces persistent pain at 2–3 days (RR=0.71; 95% CI 0.58–0.88), but provides no clear benefit during the first 24 hours. Antimicrobial prescribing should therefore be guided by disease severity, otorrhea, age, and individual clinical risk.

Antibiotics reduce the risk of tympanic membrane perforation and abnormal tympanometry at 2–4 weeks, although long-term benefits are less consistent. Adverse reactions occur more frequently among antibiotic-treated children, emphasizing the need for rational prescribing.

Allergic predisposition may coexist with middle ear pathology, particularly otitis media with effusion. Nevertheless, evidence does not support routine antihistamine or decongestant therapy specifically for acute otitis media. Confirmed allergic disorders should be managed according to their independent clinical indications.

A differentiated therapeutic approach integrating symptom severity, middle ear findings, comorbid allergic disease, treatment safety, and follow-up is consistent with contemporary evidence-based recommendations.

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References

1. Lieberthal A.S., Carroll A.E., Chonmaitree T., et al. The Diagnosis and Management of Acute Otitis Media // Pediatrics. – 2013. – Vol. 131, No. 3. – P. e964–e999. DOI: 10.1542/peds.2012-3488.
2. Thompson M., Vodicka T.A., Blair P.S., Buckley D.I., Heneghan C., Hay A.D. Duration of symptoms of respiratory tract infections in children: systematic review // BMJ. – 2013. – Vol. 347. – Art. f7027. DOI: 10.1136/bmj.f7027.
3. Venekamp R.P., Sanders S.L., Glasziou P.P., Rovers M.M. Antibiotics for acute otitis media in children // Cochrane Database of Systematic Reviews. – 2023. – Issue 11. – Art. CD000219. DOI: 10.1002/14651858.CD000219.pub5.
4. National Institute for Health and Care Excellence. Otitis media (acute): antimicrobial prescribing. NICE Guideline NG91. – London: NICE, 2018. Updated March 11, 2022.
5. Darlison P., Moresco L., Nussbaumer-Streit B., Bruschettini M., Gisselsson-Solen M. Decongestants and antihistamines for acute otitis media in children // Cochrane Database of Systematic Reviews. – 2025. – Issue 11. – Art. CD015839. DOI: 10.1002/14651858.CD015839.pub2.
6. Petre A.M., Costin R., Anghel I. Allergic Rhinitis and Allergic Sensitization in Pediatric Otitis Media with Effusion: A Systematic Review and Meta-Analysis with Narrative Synthesis of Eustachian Tube Dysfunction // Children. – 2026. – Vol. 13, No. 7. – Art. 892. DOI: 10.3390/children13070892.

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