

Recurrent Otitis Media in Children

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Abstract

Review Article

Recurrent otitis media (ROM) remains a frequent and complex pediatric health problem. It tends to prompt multiple doctor visits, antibiotic prescriptions and, not infrequently, damage to hearing as well as speech development. ROM is defined by the occurrence of recurrent episodes of acute otitis media in a specific time period and develops because of multiple factors including anatomical, immunological, environmental and microbial. This article provides an overview of the current understanding of the epidemiology, pathophysiology, risk factors, diagnostic criteria, and management of ROM. Medical, surgical, and preventative options are reviewed in order to help clinicians provide evidence-based care and reduce the impact of this disease in children.

Keywords: Recurrent Otitis Media (ROM), Eustachian Tube Dysfunction, Antibiotic Prescriptions, Pediatric Health, Nasopharyngeal Colonization.

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INTRODUCTION

Otitis media (OM) is one of the most common disorders of childhood seen in the pediatric office worldwide and is one of the most common reasons for physician visits and antibiotic use in young children [1-3]. Classically, ROM is defined as 3 or more episodes of AOMs in the last 6 months, or 4 or more episodes annually, with at least 1 episode occurring in the preceding 6 months [2, 3]. Children younger than 5 years of age, with their immature anatomy and immune resistance, are at the greatest risk [4]. The effect of ROM on subjects did not only affect the child as the families were also affected by recurrent illness and the need for treatment.

Epidemiology

OM affects a significant proportion of children under five years of age, with estimates up to 20% [4]. The highest incidence occurs between six months and two years, coinciding with the period when the Eustachian tube is anatomically immature and immune function is still developing [4]. Seasonal trends show more cases during fall and winter months, often linked to upper respiratory infections that predispose to middle ear involvement [4, 5].

Pathophysiology

Dysfunction of the Eustachian tube, resulting in inadequate middle ear ventilation and drainage, is the

most frequent cause of ROM. This defect allows bacteria to proliferate and persist. In addition to this, young children's anatomy, including their narrower, shorter, and more horizontal Eustachian tubes, makes it easier for them to get infected than adults [1-3]. Obstruction of the Eustachian tube, which is commonly due to inflammation secondary to viral upper respiratory tract infections, is also a significant factor. The role of nasopharyngeal colonization It is now widely accepted that upper respiratory tract colonization by pathogens such as *S. pneumoniae*, *H. influenzae*, and *M. catarrhalis* is a major determinant of the pathogenesis and recurrence of OM [6].

Risk Factors

ROM predominantly occurs in children under 5 years of age, with a slight male predominance [4]. There are several well-documented environmental elements, which affect the risk of contracting the disease such as tobacco smoke exposure, crowded living, and daycare attendance [5]. Allergic diseases and chronic nasopharyngeal inflammation can exacerbate Eustachian tube dysfunction [1]. Furthermore, there is increased incidence and severity associated with congenital deformities (cleft palate) and genetic disorders (Down's syndrome) [1-7].

Diagnosis

Diagnosis is based primarily on clinical history, with attention to the frequency and timing of acute otitis

media episodes [2]. Pneumatic otoscopy remains the cornerstone for detecting middle ear effusion, providing direct assessment of tympanic membrane mobility [2]. Tympanometry is a useful adjunct in unclear cases, offering objective measures of middle ear pressure and compliance [2]. Audiometric testing is crucial for children with suspected hearing impairment or repeated infections [1]. Imaging modalities such as CT or MRI are reserved for atypical presentations or when complications or anatomical abnormalities are suspected [1].

Treatment of Recurrent Otitis Media

Medical Management

Initial management generally favors medical therapy. Although continuous antibiotic prophylaxis was historically common, current evidence discourages routine use due to concerns about antibiotic resistance and side effects [3]. Select cases (mainly under the age 2 years) may benefit from prophylactic courses of amoxicillin (Amoxicillin 20 mg/kg once daily at bedtime 6 weeks to 3 months) or sulfamethoxazole-trimethoprim, especially during peak seasons or if the recurrence pattern is predictable [3].

Macrolide antibiotics, such as azithromycin, have been investigated for their anti-inflammatory and immunomodulatory properties, particularly in children with concurrent wheezing or allergic conditions. However, these remain experimental and are not part of standard protocols [1].

Intranasal corticosteroids may have a role in children with allergic rhinitis contributing to Eustachian tube dysfunction, although robust evidence supporting their routine use in ROM is lacking [1].

Surgical Management

The surgical management is recommended when medical treatment is not effective or that recurrences of inflammation cause a major hearing or quality of life impairment [2-7]. Although other variations exist, insertion of ventilation tubes through myringotomy seems to be the most common procedure, which is mainly advisable in children with recurrent AOM and especially when prolonged OME is obvious [2-7]. Ventilation tubes decrease infection prevalence and improve hearing. Sometimes tubes do not extrude for years; so the tube is surgically removed in a follow-up operation. Complications are rare but may consist of persistent otorrhea, tympanosclerosis, and rarely, chronic TM perforation [7].

Adenoidectomy is acceptable to add, particularly for children who are 4 years or more, with evidence of adenoid hypertrophy or chronic nasal symptoms. There is evidence that this combination lowers the risks of recurrence and repeated tube placement [7].

Preventive Measures

Vaccinations against respiratory pathogens have proven efficacy in reducing otitis media incidence [6]. The pneumococcal conjugate vaccine (PCV13) protects against major bacterial strains involved in AOM, while annual influenza vaccination reduces viral triggers [6]. Avoidance of tobacco smoke exposure is a key preventive strategy [5]. Breast feeding for at least six months provides protection, and limiting pacifier use after 12 months along with minimizing exposure to large daycare settings also reduces risk [5].

Supportive and Adjunctive Care

Because ROM may lead to conductive hearing loss, ongoing audiological evaluation is essential, especially in children with persistent effusion or speech delays [1]. Early referral to speech and language therapy can support developmental milestones in affected children [1].

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