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EC MICROBIOLOGY
Literature Review

Otitis Media in Kingdom of Saudi Arabia

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Abstract

Acute otitis media and otitis media with effusion are common childhood disorders, a source of significant morbidity, and a leading cause of antibiotic prescription in primary health care.

Although effective treatments are available, some shortcomings remain and thus better treatments would be welcome. Recent discoveries within the field of otitis media research relating to its etiology and pathogenesis have led to further investigation aimed at developing novel treatments. This article provides a review of the latest evidence relating to the understanding of acute otitis media and otitis media with effusion, current treatment strategies, their limitations, new areas of research, and novel strategies for treatment. Middle ear infection (otitis media).

Keywords: *Otitis Media (OM); Spinal Manipulation Therapy (SMT)*

Introduction and Objective

Otitis media (OM) is one of the common conditions for doctor visits in the pediatric population. Spinal manipulation therapy (SMT) may be a potential conservative treatment of OM. The purpose of this study is to review the literature for OM in children, outlining the diagnosis of OM, SMT description, and adverse event notation. The objective of this review was to determine whether antihistamine, decongestant or combination therapy is effective in treating children who present with OME.

Literature Review

Acute otitis media (AOM) is a leading cause of visits to physicians and of antibiotic prescriptions for young children. We systematically reviewed studies on all-cause AOM episodes and physician visits in which impact was attributed to pneumococcal conjugate vaccines, either as efficacy or effectiveness. Of 18 relevant publications found, most used the 7-valent pneumococcal conjugate vaccine (7vCRM). The efficacy of 7vCRM against all-cause AOM episodes or visits was 0% - 9% in randomized trials and 17% - 23% in nonrandomized trials. In observational database studies, physician visits for AOM were already declining in the 3 - 5 years before 7vCRM introduction (mean change, -15%; range, +14% to -24%) and continued to decline afterward (mean, -19%; range, +7% to -48%). This vaccine provides some protection against OM, but other factors have also contributed to the recent decline in OM incidence. Future effectiveness studies should thus use better-controlled methods to estimate the true impact of vaccination on AOM. Otitis media (OM) is amongst the most common childhood diseases and is associated with multiple microbial pathogens within the middle ear. Global and temporal monitoring of predominant bacterial pathogens is important to inform new treatment strategies, vaccine development and to monitor the impact of vaccine implementation to improve progress toward global OM prevention. Otitis media is caused by viral and/or bacterial infection of

the middle ear space and the resulting host response to infection. The microbiology and immunology of otitis media have been the subject of tremendous research efforts over the past 4 years by a large number of researchers throughout the world. This work has resulted in advances in understanding mechanisms of microbial pathogenesis, molecular epidemiology, genomics, identification of new viruses, polymicrobial interactions and other areas. Work on the immunology of otitis media has resulted in advances in understanding susceptibility to infection and also in elucidating the role of host responses in the pathogenesis of otitis media. The goal of this panel report is to provide a comprehensive review of research in the virology, bacteriology, and immunology of otitis media over the past 4 years. Otitis media (OM) affects nearly all preschool children, and onset in the first few months of life predicts later chronic and recurrent OM [1-4]. Data from the Indian Health Service (IHS) and the National Center for Health Statistics revealed that, during the 1990s, OM- associated outpatient visit and hospitalization rates among American Indian and Alaska Native children aged younger than 5 years were 2.3- and 2.9-times higher, respectively, than among US children in the same age group [5]. Also, in the 1990s, Northern Plains American Indians, including residents of the Bemidji Area IHS in Minnesota, had the second highest rates of IHS outpatient visits and hospitalizations for OM [5-9].

Otitis media (OM) is an inflammation of the middle ear associated with infection. Despite appropriate therapy, acute OM (AOM) can progress to chronic suppurative OM (CSOM) associated with ear drum perforation and purulent discharge. The effusion prevents the middle ear ossicles from properly relaying sound vibrations from the ear drum to the oval window of the inner ear, causing conductive hearing loss. In addition, the inflammatory mediators generated during CSOM can penetrate into the inner ear through the round window. This can cause the loss of hair cells in the cochlea, leading to sensorineural hearing loss. *Pseudomonas aeruginosa* and *Staphylococcus aureus* are the most predominant pathogens that cause CSOM. Although the pathogenesis of AOM is well studied, very limited research is available in relation to CSOM. With the emergence of antibiotic resistance as well as the ototoxicity of antibiotics and the potential risks of surgery, there is an urgent need to develop effective therapeutic strategies against CSOM. This warrants understanding the role of host immunity in CSOM and how the bacteria evade these potent immune responses. Understanding the molecular mechanisms leading to CSOM will help in designing novel treatment modalities against the disease and hence preventing the hearing loss.

Methodology

Study design: This study was community base cross section study.

Study area: It was in KSA.

Study population: In all gender and age population.

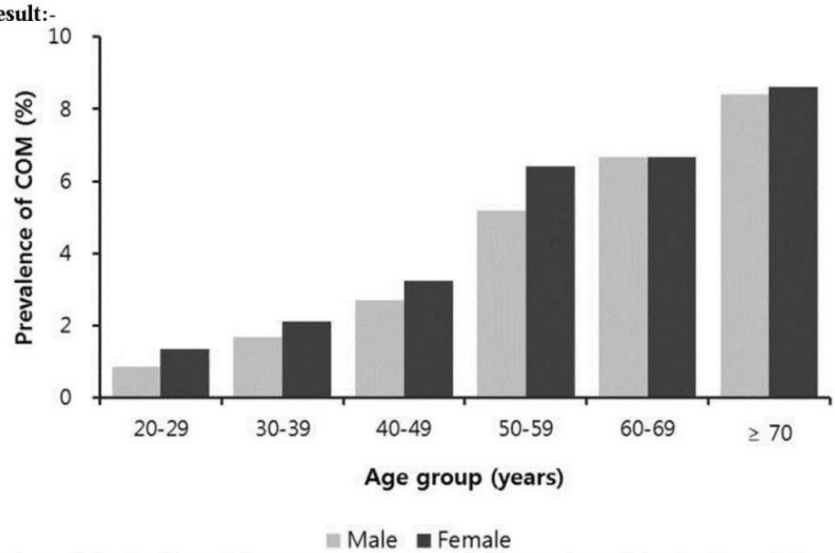
Sample size: 130 in all gender and age population.

Sample technique: We selected our sample by random sampling.

Collecting tool: The Collected of date was done by 3 part questionnaire: about the Personal data, level of knowledge and awareness for otitis media in all gender and age.

Analysis: The data was collected, then clearance and coding was done, also entered data and analysis was done by SPSS.

Result:-



Revalence of chronic otitis media by age group and sex in adults.The prevalence of chronic otitis media increased with age in both sexes.

Prevalence of COM

Among the 16,063 participants, the weighted prevalence of COM was 3.8% (tympanic perforation, 2.17%; cholesteatoma, 1.82%; otitis media with effusion, 0.68%), and those of the right, left, and both ears were 1.5%, 1.4%, and 0.9%, respectively.

The prevalence of COM according to the general characteristics of the participants is described in Table 1. Age, sex, education, residence, earphone use in noisy situations, number of household members, and subjective health status affected the prevalence of COM. An increased prevalence was associated with old age ($P < 0.0001$), female sex ($P = 0.0287$), lower education level ($P < 0.0001$), urban residence ($P = 0.0239$), not using earphones in noisy situations ($P < 0.0001$), fewer household members ($P < 0.0001$), and a poor subjective health status ($P < 0.0001$). There were no significant differences between male and female patients among the six different age groups, but the prevalence of COM tended to increase with age (Fig 1).

Prevalence of chronic otitis media according to otologic conditions of participants.

COM weighted*, % (SE)

Characteristics	Unweighted total number	No	Yes	P value
Subjective hearing				<0.0001
Not discomfort	13715	97.5 (0.2)	2.5 (0.2)	
A little discomfort	1852	89.9 (1.0)	10.1 (1.0)	
A lot of discomfort	444	72.7 (2.9)	27.3 (2.9)	
Cannot hearing anything	45	76.0 (7.1)	24.0 (7.1)	
Tinnitus				<0.0001
Yes	3593	93.3 (0.5)	6.7 (0.5)	
No	12425	97.1 (0.2)	2.9 (0.2)	
Not remember	**38**	**96.6 (2.4)**	**3.4 (2.4)**	
Facial				0.9230

Figure 1: *Histogram of mean Ra values of tested materials as affected by the different immersion media.*

Conclusion

Children with asthma or other atopic conditions have a significantly increased risk of recurrent or persistent otitis media. Children with immunogenetic predisposition to asthma or atopic conditions appear to have a similar risk for otitis media even before the onset of clinical asthma. This association is unlikely to be due to asthma medications or detection bias but potentially due to impairment in both innate and adaptive immunity and structural alterations of upper airways. Given the significant impact of atopic conditions on the

risk of recurrent and persistent otitis media and the large proportion of children who are affected by atopic conditions, it is necessary to develop individualized guidelines for the management of recurrent or persistent otitis media for children with atopic conditions, a relatively under-recognized risk factor for otitis media. Also, it is reasonable to believe that increased susceptibility to otitis media linked to underlying immune dysfunctions is a potential feature of atopic conditions. In the future, the guidelines for management of asthma or other atopic conditions should consider addressing a broader range of management issues for infectious diseases including recurrent and persistent otitis media among patients with atopic conditions.

Recommendations

To diagnose AOM, there must be acute onset of symptoms such as otalgia (or nonspecific symptoms in nonverbal children), signs of a middle ear effusion associated with inflammation of the middle ear (i.e. a TM that is bulging and, usually, very erythematous or hemorrhagic, and yellow or cloudy in colour) or a TM that has ruptured.

A five-day course of an appropriately dosed antimicrobial is recommended for most children ≥ 2 years of age with uncomplicated AOM, with a 10-day course being reserved for younger children (six to 23 months) and cases with a perforated TM or recurrent AOM.

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