

Frequency of Otitis Media with Effusion in Children with Allergic Rhinitis

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ABSTRACT

Background: Otitis media with effusion (OME) causes hearing loss specially in children. It may be associated with allergic rhinitis (AR). No detailed literature is available in our setup in this regard.

Aim: To know the burden of OME in children suffering from Allergic Rhinitis.

Methods: It was a cross-sectional study conducted at Department of ENT Sir Ganga Ram Hospital, Lahore in one year (December 01, 2016 to November 30, 2017). Two hundred and twenty cases meeting inclusion criteria were taken from outdoor of ENT Sir Ganga Ram Hospital Lahore. All cases having allergic rhinitis underwent clinical examination using Tympanometry to diagnose Otitis media with effusion as per operational definition. The data was entered in an attached proforma and analyzed using SPSS version 22.

Results The mean age of patients was 8.46±3.08 years with minimum and maximum age of 4 and 14 years respectively. There were 120(54.55%) males and 100(45.45%) females. A total of 42(19.09%) cases had OME in children with Allergic rhinitis.

Conclusion: A higher frequency of OME (19.09%) was found in children with allergic rhinitis. Therefore, children having allergic rhinitis should also be screened for co-existing conditions like otitis media with effusion and should be treated along with AR.

Keywords: Paediatric, allergic rhinitis, otitis media, effusion,

INTRODUCTION

Allergic rhinitis affects large number of children and adults in our community and in other parts of the world specially industrialized countries^{1,2}. It affects millions of people in the world, specially the Caucasian races³. Asthma and rhinitis often co-existent in majority of patients^{4,5}. Some allergens in the air may produce symptoms throughout the year and these affect children's quality of life⁵.

The nasopharyngo-tubal unit or the "unified airspace" consists of nose nasopharynx and middle ear⁶. The Eustachian tube (ET) plays a pivotal role in the pathophysiology of diseases related to this region. It is responsible for aeration, clearance and defence of middle ear⁷. It stops travelling of infectious secretions from the naso-opharynx to the middle ear⁸. Allergic rhinitis causes congestion of mucosa of ET resulting in ET dysfunction which is pivotal to the development of otitis media with effusion⁹. OME is the most frequent cause of hearing loss and delayed speech development in children¹⁰. OME may result from multiple factors like bacterial infection, poor clearance, local inflammation or atopy¹¹. Many animal

studies have proposed a relation between AR inflammation and ET dysfunction. A nasal allergy induced in rats caused ET congestion and negative pressure resulting in stoppage of mucociliary clearance¹². Hence a link between AR and OME has been proposed^{13,14}. In fact OME has a close association with allergic diseases¹⁵. This warrants an increased awareness of OME in children with allergic rhinitis¹⁶. In a study done on Children aged 4-14 it was reported that 7.5% of children with Allergic rhinitis had Otitis media with effusion¹⁷. In another study secretions of middle ear showed higher number of eosinophils and T-lymphocytes in atopic patients with OME in comparison with non-atopic individuals¹⁸. For the management of OME intranasal corticosteroids having limited systemic absorption are safer than oral corticosteroids and their use results in quicker resolution of OME^{19,20}.

The rationale of this research is to determine the frequency of OME in children with Allergic rhinitis as no study has been done on local population. If we find high incidence, then in future children with allergic rhinitis can be screened for OME and hence they can be treated along with allergic rhinitis

MATERIAL AND METHODS

It was a cross-sectional study conducted at the Department of ENT Sir Ganga Ram Hospital, Lahore

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in one year (December 01, 2016 to November 30, 2017). Two hundred and twenty cases meeting inclusion criteria were taken from outdoor of ENT Sir Ganga Ram Hospital Lahore through non-probability consecutive sampling. All children aged 4-14 years of age of either gender having allergic rhinitis, diagnosed at least 1 year ago, were included in the study. Children with acute upper respiratory tract infection within a couple of weeks and those with craniofacial malformations or with significant ear wax were excluded from the study. All cases having allergic rhinitis underwent clinical examination using Tympanometry to diagnose Otitis media with effusion as per operational definition. The data was entered in an attached proforma and analyzed using SPSS version 22.

RESULTS

A total of 220 cases were included in the study. There were 120(54.55%) males and 100(45.45%) females. The mean age of patients was 8.46±3.08 years with minimum and maximum age of 4 and 14 years respectively. Out of 220 cases 42(19.09%) had OME in children with Allergic Rhinitis.

Table-1: Frequency of OME in various age groups

Age group(Yrs)	OME		Total
	Yes	No	
4-9	23(54.8%)	111(62.4%)	134(60.9%)
10-14	19(45.2%)	67(37.6%)	86(39.1%)
Total	42	178	220

Chi-square = 0.824 p-value = 0.36

Table-2: Frequency of OME regarding gender

Gender	OME		Total
	Yes	No	
Male	19(45.2%)	101(56.7%)	120(54.5%)
Female	23(54.8%)	77(43.3%)	100(45.5%)
Total	42	178	220

Chi-square = 0.181 p-value = 0.178

DISCUSSION

AR is a long-standing disease in which there is allergic hypersensitivity response of the upper airways to allergens in the air. Coexistent morbidities in patients with AR include asthma, rhinosinusitis (RS), OME and sleep disturbance¹⁴. Studies on pathogenesis of OME have pointed to an interplay between infection, allergy and ET dysfunction²¹. A study done by Martines et al in two groups of children (atopic and non-atopic) revealed that atopic children are more likely to develop OME and to have worse hearing loss than non-atopic children⁷.

Recently a study was done in Hong Kong for comparison of development of OME in atopic and

non-atopic children aged 4–12 years. The result of the study has shown that 12 out of 159(7.5%) of the AR group had OME²². Our current study was done on cases from 4-14 years with mean age of patients as 8.46±3.08 years with minimum and maximum age of 4 and 14 years respectively. There were 120(54.55%) male and 100(45.45%) female cases with higher male to female ratio. A total of 42(19.09%) cases had OME in children with AR. The frequency of otitis media with effusion in our current study is higher than the above cited study.

Another study done in 2012 at Copenhagen to investigate the association between atopic disease and OME revealed OME in 39% of the cases associated with allergic rhinitis. The frequency of OME in our current study is lower to the above cited study. This difference could be due to different climatic conditions at various places of study

CONCLUSION

According to the findings of this study we found high frequency i.e., otitis media with effusion, 42(19.09%) in children with Allergic rhinitis. So, cases of allergic rhinitis should also be screened for co-existing conditions like otitis media with effusion and should be treated along with allergic rhinitis.

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