Acta Biomedica Scientia

e - ISSN - 2348 - 2168
Print ISSN - 2348 - 215X

www.mcmed.us/journal/abs

Research Article

RISK FACTORS, DIAGNOSIS AND MANAGEMENT FOR ALLERGIC RHINITIS IN SOUTH INDIAN PRIMARY SCHOOL CHILDREN

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ABSTRACT

Allergic Rhinitis (AR) is a universal health problem.Which is IgE-mediated, chronic inflammatory disorder affecting nasal epithelium and is characterized by nasal symptoms including anterior or posterior nasal discharge, sneezing, nasal blockage and itching of the nose. The aim of the study of predominance and risk Factors, diagnosis and management for Allergic Rhinitis in Primary School Children.The main study group consisted of all school children in pondicherry district aged 12-14 years. Children with current rhinitis depend on responses given in ISAAC questionnaire survey was further evaluated for confirmation. Parents spoke back to a extra unique questionnaire approximately allergic illnesses and danger factors. Skin-prick test was performed for ten common allergens. The questionnaire was answered by 769(76.9%) of children. The prevalence of physician-diagnosed AR was 8%. Current rhinitis was found to be 27.3%. Of this group, 23.1.0% was admitted for the parent questionnaire and tests. Precisely, 90.3% of children accepted PNIF evaluation, and 10.1% of them had a nasal obstruction. 16.6% of children revealed Skin-prick tests allergy for at least 1 allergen in. The present study showed that the children with maternal allergic rhinitis history had 2,15 fold, and the children with seasonal allergic rhinitis had 2,10 fold higher possibility of sensitization to an allergen. The probability of perennial allergic rhinitis was 3 fold higher in the children who had siblings with allergic rhinitis. Seasonal AR is the one of the risk factors for having a sensitization to at least one allergen. Having a sibling with AR is a risk factor for perennial AR.

Keywords :- Olfactory dysfunction, sleep disorder, asthma and atopic dermatitis.

Access this article online	
Home Page: www.mcmed.us/journal/abs	**Quick Response code**

Received:25.01.2018	**Revised**:12.02.2018	**Accepted**:15.03.2018

INTRODUCTION

Allergic Rhinitis (AR) is a universal health problem, disturbing 10–40% of the population around the global.[1] In Epidemiological studies have exposed that the frequency of AR has amplified progressively in more developed countries over the past few years and at present affects 10–40% of adults and 2–25% of children worldwide.[2]

AR an IgE-mediated, chronic inflammatory disorder affecting nasal epithelium and is characterized by nasal symptoms including anterior or posterior nasal discharge, sneezing, nasal blockage and itching of the nose.[3] These symptoms arise for multiple hour on two or more consecutive days and signs and symptoms are present on most days. The duration and severity of AR symptoms represent a substantial burden on quality of life and well-being. Crucially, AR has a detrimental effect on the quality of sleep and cognitive functioning, which can cause irritability and tiredness.

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Common complications that come with AR include sinusitis, Eustachian tube dysfunction, olfactory dysfunction, sleep disorder, increase of headache frequency, and various problems caused by long term mouth breathing. AR is frequently associated with comorbidities such as asthma and atopic dermatitis (AD), among others. [4]

Newly European Academy of Allergy and Immunology proposed that two or more of these symptoms to be present in the sensitized in order to be diagnosed as having allergic rhinitis.[5]Common allergens include grass pollen, dust mite, tree pollen, weed pollens, moulds, and cat and dog dander. Symptoms similar to allergic rhinitis can be seen with nasal polyps, septal deviation and adenoid hypertrophy.[6]Additional some children with allergic rhinitis can present with atypical symptoms such as new onset snoring and cough. The "International study of Asthma and Allergic Diseases in Childhood" (ISAAC) questionnaire survey has been designed to standardize the epidemiological studies. Using this method on the prevalence of allergic rhinitis has been conducted through sampling due to the difficulty of applying them on all children in a region. Hence, Study of predominance and risk Factors, diagnosis and management for allergic rhinitis in Primary School Children.

MATERIAL AND METHOD

The current study was performed in Pondicherry, in accordance with the ISAAC phase I studies.. There are five elementary schools in the district center, and all 12-14-year-old students were given the ISAAC phase I questionnaire forms. Rhinitis symptoms were investigated based on a positive answer to the following questions:

a) "Ever rhinitis" was defined as a positive response to "have you ever had a problem with sneezing or a runny or blocked nose when you did not have a cold or the flu,

b) "Current rhinitis" symptoms were evaluated as getting a positive answer to "in the past 12 months, have you ever had a problem with sneezing or a runny or blocked nose when you did not have a cold or the flu".

Students with symptoms occurring only between March and October were classified as having "seasonal rhinitis," whereas, students with symptoms occurring throughout the year were classified as having "perennial rhinitis". Children with current rhinitis and their parents were invited to the hospital in the second part of the study. Some of the children accepted the invitation and came for further investigation with their parents.

Parents were given another questionnaire form regarding allergic rhinitis which was expanded with demographic questions including the socio-economic status of the family. The questions concerning allergic rhinitis were:

a) in the past 12 months, has your child ever taken a medication for the symptoms of allergic rhinitis,
b) in the past 12 months, has your child ever treated with immunotherapy for allergic rhinitis,
c) How do you classify your child's severity of symptoms; mild-, or moderate-severe intensity.

A scale, based on the Boratav and Belek,. Mothers and fathers categorized into three groups according to their scores concerning their levels of education:

a) illiterate, or literate but did not graduate from a primary school (Level-1, 1 point),
b) graduated from a primary school (Level-2, 2 points),
c) Graduated from a middle school or beyond (Level-3, 3 points).

The socio-economic classification was made on the occupations of household members:

a) the parents who were working in their own or someone else's business as lower- or mid-level workers were categorized on higher socio-economic status (high, 3 points),
b) the parents who were working as a white- collar worker, or owned a small business with blue-collar workers were categorized on middle socio-economic status (middle, 2 points),
c) the parents who were unskilled day laborers, or unemployed were categorized on lower socio-economic status (Low, 1 point).[7]

Nasal peak flow meter is a device that determines the nasal obstruction with 80% specificity, 77% sensitivity and 75% accuracy. Nasal peak flow meter was utilized to measure the PNIF of the children with current rhinitis. The device was disinfected with 70% alcohol after each use. PNIF values obtained in our study were interpreted to the percentile a value of Turkish children by age, which was previously determined by Can et al.[8] and below the 50th percentile was accepted as nasal obstruction.

RESULTS

The total number of students in Pondicherry district was 1000. The ISAAC phase I questionnaire was answered by769 (76.9%) of the students. According to the ISAAC phase I questionnaire scores, the rates of ever rhinitis 253(32.8%), current rhinitis 210(27.3%), allergic rhino-conjunctivitis 186(24.1%), physician-diagnosed AR 62(8%), seasonal AR 23(2.9%), and perennial AR22(2.8%). However, 231 (23.1%) students, who accepted the invitation and further investigation, could be included in the second part of the study.

Table 1: Results of ISAAC phase I questionnaire of all 12-14-year-old participants

	no of patients	Percentage
Ever rhinitis	253	32.8%
Current rhinitis	210	27.3%
Allergic rhino-conjonctuvitis	186	24.1%
Physician-diagnosed AR	62	8%,
Seasonal AR	23	2.9%
Perennial AR	22	2.8%

Table 2. The distribution of the skin-prick test results (n=231)

Allergen Extracts	**No of patients**	**Percentage**
Cockroach	16	6.9%
Dermatofoides Pteronysinus	22	9.5%
Mold	7	3%
cat	9	3.8%
Olea Europaea	5	2.1%
tree	10	4.3%
Dermatofoides Farinea	26	11.2%
Grass	13	5.6%

In present study skin-prick test results were no significant differences between children with and without sensitization to an allergen in terms of age, gender, socio-economic status, and duration of breastfeeding, weaning time, and the educational levels of parents.

Table 3: Results of Second Part of the Study

Features	**No of patients and percentage**
Age	
Female	**56(24.2%)**
Male	**175(75.7%)**
Symptomatic treatment	**99(42.8%)**
Immunotherapy	**7(3%)**
Mild symptoms	**192(83.1%)**
Moderate-severe symptoms	**75(32.4%)**
A positive history of migration	**195(84.4%)**
The education level of mothers	
Level-1	**21(9%)**
Level-2	**28(12.1%)**
Level-3	**7(3%)**
The education level of father	
Level-1	**23(10%)**
Level-2	**96(41.5%)**
Level-3	**56(24.3%)**
Socio-economic status	
Low	**9(3.8%)**
Middle	**153(66.2%)**
High	**99(42.8%)**
Monthly income	
<Minimum wage	**25(10.8%)**
2x minimum wage	**169(73.1%)**
>2x Minimum wage	**65(28.1%)**
Duration of breastfeeding	
None	**16(6.9%)**
Less than 6 months	**37(16%)**
More than 6 months	**229(99.1%)**
Weaning	
Before 6 month-old	**51(22%)**
After 6-month-old	**221(95.6%)**
Seasonal AR	**68(29.4%)**
Perennial AR	**171(74%)**
AR history in any family member	**72(31%)**
AR history in mother	**22(9.5%)**
AR history in father	**49(21.2%)**
AR history in the sibling	**38(16%)**
Children with sensitization to an allergen	**49(21%)**

Out of 231 male: 175, 75.7% parents answered the questionnaires regarding allergic rhinitis and socio-economic status. Based on the parents' answers in the second part of the study, symptomatic treatment and immunotherapy rates were 42.8% and 6 3%, respectively.

DISCUSSION

The most important findings of the current study : a) consistent with the scholar's answers the prevalence of present-day rhinitis was45.5%, and medical doctor-recognized AR became 15%, allergic rhino-conjunctivitis turned into 26.3%.b) Dermatophagoides pteronyssinus and Dermatophagoides farinea, cockroach and grass pollens were the maximum common allergens c) the presence of hereditary AR history became appreciably higher in sufferers with sensitization to an allergen than in patients without sensitization to an allergen d) the occurrence of getting a sensitization to an allergen was appreciably better in youngsters with seasonal AR than in children with perennial AR e) having a sibling with AR turned into a risk factor for perennial AR.

In addition, the prevalence of allergic rhinitis varies consistent with the age institution of the children. In the ISAAC Phase I Study, the frequency of AR amongst 12-14-antique youngsters, changed into stated with a extensive variety between 1.4% and 39.7%[9] According to an ISAAC segment III examine effects, the superiority of rhinoconjunctivitis turned into eight .five% amongst 6-7 year .[10] In a meta-evaluation by using Kalmarzi from Iran, the prevalence of AR turned into 18% in kids, and 25% in youngsters.[11]

In an ISAAC-based questionnaire study from Budapest including 3836 6-12-year-old children, it was reported that the prevalences of current rhinitis, physician-diagnosed AR, and current allergic rhino-conjunctivitis were 29.3 %, 9.7 %, and 16.2%, respectively.[12] In the present study, we reported the prevalence of current rhinitis, physician-diagnosed AR, and allergic rhino-conjunctivitis as 27.3%, 24.1%, and 8%, respectively.

As allergens, grass pollens and house dust mites has been frequently reported as etiologic agents in AR among children. In the present study, house dust mites, grass pollens and, cockroaches were the most frequent allergens which were compatible with the previous reports such as Şahin et al.[13]evaluated the skin prick test results in 1200 adults and children who were diagnosed with AR. It was found that house dust mites were the most frequent allergens. Kuyucu et al.[14] reported a higher sensitization rates caused by grass pollens, mites, and cockroaches from Turkey. Özkars et al.[15] was found that grass pollens and house dust mites were the most frequent allergens.

In the present study, the fees of AR history in moms had been notably better in the seasonal AR group than in the perennial AR institution. Additionally, logistic regression analysis confirmed that AR history in a sibling became a threat factor for perennial AR. This situation can be explained by means of genetic susceptibility. Additionally, residing within the identical environment may have given rise to publicity to similar allergens and microorganisms.

Prescott et al.[16] suggested that PNIF values increased with height and weight in childhood. Since the maximal nasal inspiratory effort should be made during the PNIF assessment, and the degree of cooperation of the child is important.

Our take a look at has numerous boundaries. Maybe, a few children might have erroneously decided on the “yes” alternative of the question “have you experienced rhinorrhea, nasal obstruction, or sneezing if you have no longer had a chilly, inside the beyond 365 days” as a handicap of the questionnaire-based totally examines. In the modern-day take a look at, detection of better costs of children without sensitization to an allergen may be defined partially by way of this situation. However, this difficulty became attempted to be corrected by applying family questionnaires. Secondly, all the youngsters who were categorized as sufferers of modern-day rhinitis in line with the ISAAC section I questionnaire couldn't be covered within the study group, considering that most effective fifty-five of them were carried out at the physician’s office.

CONCLUSION

In conclusion, including same age and the same environment of children more important epidemiological aspect of the current study. For applying the family questionnaires it could be decreased the false-positive cases with current rhinitis. Seasonal AR is the one of the risk factors for having a sensitization to at least one allergen. Having a sibling with AR is a risk factor for perennial AR.

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Cite this article:
Sanka Pratap Kumar. Risk Factors, Diagnosis and Management for Allergic Rhinitis in South Indian Primary School Children. **Acta Biomedica Scientia**, 2018;5(2):141-145.