The study of co-morbid conditions in adults with allergic rhinitis, from Mumbai, Maharashtra, India and their comparison with children

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Abstract Allergic rhinitis (AR) is an allergen-induced inflammation of the nasal mucosa. Several studies have shown a link not only between AR and asthma but also with other co-morbid conditions. It is important to recognize the onset and existence of these co-morbid conditions, for adequate treatment, prevention of the development of new allergen sensitizations and air-way hypersensitivities. This is a prospective study of co-morbid conditions in adults with AR, from Mumbai, Maharashtra, India and compares them with those in children 23 consecutive children below 6 years (Group 1), 42 children between age of 6 years and 14 years in Group 2 and 57 adults in Group 3 were selected for the symptoms of AR (sneezing, watering and blocked nose), which were currently sufficiently troublesome to require medication. A high association of co-morbid conditions with AR was found. More than 80% suffered from one to three co-morbid conditions each. The most common co-morbid condition was asthma in all the groups. Often asthma and sinusitis was asymptomatic and a high degree of suspicion was needed for diagnosis. Adults had the highest prevalence of sinusitis and allergic conjunctivitis. Prevalence of urticaria was similar in children as well as adults. Studies with larger data samples are needed to confirm these associations.

Keywords: Rhinitis · Co-morbidity · India · Children · Adults

Introduction

Allergic rhinitis (AR) is an allergen-induced inflammation of the nasal mucosa. An area of concern is the trivialization of allergic rhinitis as, it is under-appreciated, under-diagnosed and under-treated [1]. Several studies have shown a link not only between AR and asthma [2–8, 19] but also with other co-morbid conditions [9]. It is important to recognize the onset and existence of the co-morbid conditions, for adequate treatment [10], prevention of the development of new allergen sensitizations and air-way hypersensitivities [10–11]. These diseases may develop concurrently or sequentially. The aim was to conduct a prospective study of co-morbid conditions in adults with allergic rhinitis, staying in Mumbai, Maharashtra, India and compare them with those of children.

Materials and methods

We selected 23 consecutive children below 6 years in Group 1 (mean age = 3.8 ± 1.4) years, 42 children between age of 6 and 14 years in Group 2 (mean age = 11.2 ± 3.2) and 57 adults in Group 3 (mean age = 36.0 ± 11.5 ; males = 26 (46%), females = 31 (54%), who visited the Allergy and Asthma Clinic of The P. D. Hinduja National Hospital, Mumbai between March 1, 2005 to November 30, 2006 for the symptoms of AR (sneezing, watering and blocked nose), which were currently sufficiently troublesome to require medication and were of more than two weeks duration. A detailed history was documented on a performed proforma (Appendix). All patients were tested with twelve common allergens and only those who gave a positive skin test with at least one allergen tested (12) were included in the study. Asthma was diagnosed when

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the patient had clinical symptoms or if the FEV₁ was below 75% of predicted values. X-ray paranasal sinuses in all cases in group 2 and 3 and X-ray adenoids were taken in group 1.

Results

Table 1 gives the data sample and the co-morbid conditions associated with AR children below 6 years age (group 1), children above six (group 2) and adults (group 3). Only about 20% of the study patients had no co-morbid conditions: 4/23 (17.4%), 5/42 (11.9%) and 6/57 (11%) in group 1, 2, and 3 respectively while one or more co-morbidities were seen in (19/23=82.6%), (37/42=88.1%) and (51/57=89%) in groups 1, 2, and 3 respectively. Asthma was the most frequent co-morbid condition. It was seen in 17/23 (73.9%), 32/42 (76.2%) and 30/57 (52%) in group 1, 2 and 3 respectively. Diagnosis of asthma in adults (30/57 = 52%) was based on spirometry in all cases. Clinical symptoms of asthma were present only in 5/30 (16.6%). The percentage of children having asthma was similar in those below and above six years (73.9 v/s 76.2%); and in both it was higher than in adults (30/57 = 52%). In children spirometry could be performed only in 29/42 (69%) in group 2 and none in group 1. Conjunctivitis was noted in (27= 47.4%). (15 = 35.71%) and (4 = 17.4%) in group 1, 2 and 3 respectively. The prevalence of urticaria was similar in all the groups; group 1 (8/23 = 34.8%), group 2 (14/42 = 33.8%) and (19/57 = 33%) Group 3. Angioneurotic edema = 8/57 = 14%) and swelling over the joints (8/57 = 14%), was seen only in group 3. Atopic dermatitis (3=13%) and enlarged adenoids (2 = 8.7%) were seen only in group 1. Nasal polyps were seen in group 3 (4 = 7%) and 2 (4.8%) in group 2 only. Sinusitis was highest 13/57 (22.8%) in group 3, followed by 6 (14.29%) in group 2 and 4 (17.39%) in group 1. We

found halitosis in 4 (6.2%) patients and swelling of the face in 2 (3.1%).

Discussion

Allergic rhinitis can be associated with a number of co-morbid conditions [9], including asthma [2–8, 19], atopic dermatitis, and nasal polyps. Evidence now suggests that uncontrolled allergic rhinitis can actually worsen the inflammation associated with asthma or atopic dermatitis. This could lead to further morbidity and even mortality.

Allergic rhinitis can frequently lead to significant impairment of quality of life [14] symptoms of fatigue, drowsiness due to the disease or to medications), and malaise can lead to impaired work and school performance, missed school or work days, and traffic accidents. It is important to recognize the onset and existence of the co-morbid conditions, for adequate treatment [10], prevention of the development of new allergen sensitizations and airway hypersensitivities [10,11]. These diseases may develop concurrently or sequentially.

Similar symptoms of allergic rhinitis may vary in their effect on different individuals as well as in children and adults. The goal of therapy should be reduce impairments that patients consider important, as well as to tailor the treatment according to the age of the patient.

The reported incidence of asthma in adults with AR varies from 15% to 40% [1, 7, 13]. It is important to note that, in our study, even in adults, a significant number of patients, did not give a history or have symptoms of asthma and were diagnosed only on spirometry. In children spirometry could be performed only in 69% in group 2 and none in group 1. Out of these 31% had mild to moderate bronchoconstriction without any history of symptoms of asthma. In Thiruv

Table 1 Comparison of co-morbid conditions associated with AR in adults and children

Group	1	2	3
Age	< 6 yrs	6 yrs to 14 years	Adults
Total (n)	23	42	57
No co-morbid condition	4(17.4%)	5(11.9%)	6(11%)
Mean age +/-SD	3.78+/-1.35	11.2 +/-3.17	36 +/-171.5
Asthma	73.9% (n = 17)	76.2% (n = 32)	52.6% (n = 30)
Allergic conjunctivitis	17.39 % (n = 4)	35.7 % (n = 15)	47.4% (n = 27)
Urticaria	34.9% (n = 8)	33.3% (n = 14)	33.3% (n = 19)
Sinusitis	17.4 (n = 4)	14.3 % (n = 6)	22.8% (n = 13)
Nasal polyps	Nil	2(4.8%)	7%(n = 4)
Adenoids	3(13%)	Nil	Nil
Angioneurotic edema	Nil	Nil	14% (n = 8)
Atopic dermatitis	6(26%)	3(7%)	Nil
Swelling joints	Nil	Nil	3(5.3%)

gadam's [11] study, 62% had bronchial hypersensitivity in the absence of symptoms of asthma. It is important to realize that asthma may not be clinically manifest in AR patients and there is, therefore a need to diagnose airway hypersensitivity with spirometry as early as possible, to prevent or delay the development of asthma and other co-morbid conditions, allergen sensitizations [10,15–17] and improving quality of life. A high degree of suspicion is needed to diagnose airway hyper-reactivity and obstructive lung disease early in the course of AR. However, tests available to detect airway hyper-reactivity, at younger age are not easily available and difficult to perform.

In our study, sinusitis was highest (22.8%) in group 3 (adults), followed by Group 2 (14.29%) and 17.39% in group 1. These figures are lower (69%) than that of Varghese [19]. An important feature was that majority of these children did not give a history of symptoms suggestive of sinusitis. On enquiry three had a history of headache and / or throat clearing and mouth breathing. Therefore, X-ray of the sinuses/Adenoids should be a part of managing AR.

Allergic conjunctivitis was noted in 47.4%), 35.71%) and 17.41% in group 1, 2 and 3 respectively. It is quite likely that some of the children may have visited ophthalmologists and may not have presented to the allergy clinic. Atopic dermatitis (26%) and enlarged adenoids (13%) were seen only in group 1, probably because atopic dermatitis and enlarged adenoids are mainly seen in infancy and early childhood. Prevalence of urticaria was similar in all three groups (group 1 = 34.8%), group 2 = 33.3% and Group 3 = 33.3%) while angioneurotic edema (14%) and swelling over the joints (5.3%), was seen only in adults (group 3). Future studies with larger data samples will confirm these associations.

Conclusion

In both adults and children, less than 20% of AR were free from co-morbid conditions and more than 80% had one to three co-morbid conditions each. The most common association was with asthma, followed by urticaria and allergic conjunctivitis. Angioneurotic edema and joint swelling were seen only in adults. Studies with larger data samples are required to confirm these associations and their significance.

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Appendix

Proforma

NAME:

AGE:

SEX:

HH.NO.:

SYMPTOMS

Yes/No

Duration

I. ALLERGIC RHINITIS

1. Nose leak
2. Nose block
3. Sneezing
4. Sore throat
5. Itchy nose

II. ASTHMA

1. Cough specially nocturnal cough
2. Breathlessness
3. Wheezing

III. URTICARIA / ATOPIC DERMATITIS

1. Skin rash
2. Swelling of face / body
3. Pruritis

IV. CONJUNCTIVITIS

1. Watering of eyes
2. Eye redness
3. Itchy Eyes

V. SINUSITIS / ADENOID HYPERTROPHY

1. Headache
2. Throat clearing
3. Snoring

Examination of nose for polyps

VI. H/O any other illness:

VII. F/H of asthma / allergy

VIII. INVESTIGATIONS:

1. Skin prick tests to 10 common allergens
2. Pulmonary function tests
3. X-Ray paranasal sinuses
4. X-Ray adenoids