Original Research Paper

Paediatrics

A CORRESPONDENCE

ALLERGIC RHINITIS WITH COMORBIDITIES AND RHINOCONJUNCTIVITIS QUALITY OF LIFE (RCQOL) IN CHILDREN

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ABSTRACT Background: Children suffering from allergic rhinitis have been found to be at a greater risk of suffering asthma, otitis media, obstructive sleep apnea and various other comorbidities. This can largely impact the quality of life, cognitive function and sleep pattern of these children.

Aim: To determine comorbidities and quality of life using RCQOL score in Indian children with Allergic Rhinitis.

Materials and Method: The study included 42 patients between the ages of 6 to 12 years having signs and symptoms of Allergic Rhinitis. Associated comorbidities and their quality of life were analyzed using Paediatric Rhinoconjunctivitis Quality of Life (RCQOL) Questionnaire. **Results:** Post nasal drip, pharyngotonsillitis and asthma was the most common comorbidity seen in the children with allergic rhinitis. On assessing the quality of life 97.6% had nose symptoms, 61.9% of children had practical problems and only 23.8% had activity limitations. **Conclusion:** It is not only important to look for comorbid conditions in a child with allergic rhinitis but also assess their quality of life in various domains. As severity of symptoms are different at different age groups it is mandated to assess all the domains in all age groups to provide a better quality of life in these allergic children.

KEYWORDS : Allergic Rhinitis, RCQOL, Comorbidities, Rhinoconjunctivitis.

INTRODUCTION

Allergic rhinitis (AR) is a chronic inflammatory disease of the nasal membrane which is characterized by symptoms such as sneezing, rhinorrhoea, nasal congestion, and nasal itching caused by sensitization to one or more aeroallergens. Often, allergic rhinitis is frequently associated with eye symptoms such as tearing, redness, and itching collectively referred to as allergic rhinoconjunctivitis.¹ Over the past 40 years an upsurge in AR has taken place throughout the world and is a growing concern. Its symptoms may appear in infancy, with the diagnosis generally established by the time the child reaches age 6 years.² Children suffering from allergic rhinitis have been found to be at a greater risk of suffering asthma, otitis media, obstructive sleep apnea and various other comorbidities. This can largely impact the quality of life, cognitive function and sleep pattern of these children. Hence, this study was done to systematically determine comorbidities and quality of life in Indian children with Allergic Rhinitis.

METHODS & MATERIALS

This was a prospective study conducted over 12 months in the Pediatrics department of a tertiary care hospital in Navi Mumbai. The study included 42 patients between the ages of 6 to 12 years having signs and symptoms of Allergic Rhinitis. Rhinitis of infectious etiology was excluded from the study.

Data of the patients were recorded in a pre-designed proforma. Demographic details were along with the history and clinical examination was noted. Paediatric Rhinoconjunctivitis Quality of Life Questionnaire (RCQOL) scoring was done for all the children with allergic rhinitis, satisfying the inclusion criteria.

The Paediatric RCQOL was devised by Juniper et al to measure the quality of life in children with allergic rhinitis. The RCQOL has 23 questions in 5 domains (nose symptoms, eye symptoms, practical problems, activity limitation and other symptoms). Children were asked recall how they have been during the previous week and respond to each question on a 7-point scale (score 0 to 7). The overall RCQOL score is the mean of all 23 responses and the individual domain scores are the means of the items in these those domains.³⁴ The study was approved by the institutional ethics committee (IEC) prior to its initiation. Informed consent was taken from parents or guardians of all the children satisfying the inclusion criteria. An information sheet was given to all the participating patients.

STATISTICAL ANALYSIS

After data collection, data entry was done in Microsoft Excel. Data analysis was done with the help of SPSS version 15 & Sigma Plot version 10. Qualitative data is presented with the help of frequency and percentage table.

RESULTS

Table 1: Basic Demographic of the study population

Data	Frequency	Percentage
Sex		
Male	25	59.52%
Female	17	40.48%
Total	42	100.00%
Age		
6 to 8	16	38.10%
8.1 to 10	12	28.57%
10.1 to 12	14	33.33%
Total	42	100.00%

Demographic data showed that 60% male and 40% female amongst the total 42 patients had allergic rhinitis. On classifying according to age, the incidence of allergic rhinitis was seen highest amongst children aged 6 to 8 years which was 38.1% followed by 10.1 to 12 years and 8.1 to 10 years age group (Table1).

Table 2: Distribution of symptoms of AR in the study population

Symptoms	Frequency	Percent
Rhinorrhoea	42	100.00%
Sneeze	41	97.60%
Nose Block	37	88.10%
Cough	34	81.00%
Headache	26	61.90%
ltchy Throat (PND)	24	57.10%
Rapid Breathing	21	50.00%
Watering eyes	20	47.60%
Day time sleep	16	38.10%
Wheeze	15	35.70%
Malaise	14	33.30%
Halitosis	10	23.80%

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Snoring	9	21.40%
Gastro-esophageal Reflux (GER)	0	0.00%

Among the symptoms of allergic rhinitis, rhinorrhoea & sneezing were seen in nearly all the patients of AR. Nose block & cough were also a common symptom. Headache was present in two-thirds of patients and day-time sleep in one-third of patients (Table 2).

Table 3: Examination findings of AR in the study population

Examination finding	Frequency	Percent
Allergic shiners	25	59.50%
Allergic gape (Open Mouth Breathing)	16	38.10%
Inf. turbinate hypertrophy	15	35.70%
Darrier's line	9	21.40%
DNS (Deviated Nasal Septum)	9	21.40%
Dental Malocclusion	4	9.50%
Narrow nostrils	2	4.80%
Nasal Polyp	0	0.00%

Examination findings revealed that around 50% of the patients had Allergic shiners while Allergic gape (Open mouth breathing) and inferior turbinate hypertrophy were seen in one-third of the patients. Nasal polyp was not seen in any of the patients of AR (Table 3).

Table 4: Co-morbidities associated with AR in the study population

Comorbidities	Frequency	Percent
Post nasal drip	22	52.40%

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Pharyngotonsillitis	21	50.00%
Asthma	20	47.60%
Conjunctivitis	15	35.70%
Behavioral Abnormalities	7	16.70%
Hyper-nasality	6	14.30%
Allergic Dermatitis (Eczema)	5	11.90%
Otitis Media	5	11.90%
Undernourished	2	4.80%
Speech Abnormalities	1	2.40%

Comorbidities such as post-nasal drip, pharyngotonsillitis and asthma were seen in nearly fifty percent of the patients. Conjunctivitis was seen in one-third of the patients. Behavioral abnormalities, hypernasality, allergic dermatitis (Eczema), otitis media & speech abnormalities were uncommon comorbidity (Table 4).

Table 5: Domain of RCQOL affected in the study population

Domain of RCQOL	Percent
Nose Symptoms	97.62%
Practical Problems	61.90%
Other Symptoms	38.10%
Eye Symptoms	28.57%
Activity Limitation	23.81%

The domain of RCQOL affected the most were nose symptoms. Practical problems were seen in two-thirds while other symptoms were affected only in one-third. Eye symptoms and activity limitation were seen in around one-fourth cases (Table 5).

Table 6: Distribution of severity	of syr	nntoms		domain) i	n different age groups	
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Age	Grade of severity		Nose	Eye	Practical	Other	Activity Limitation
Group	(Score)		Symptoms	Symptoms	Problems	Symptoms	-
6 to 8	Mild (0,1,2)	Frequency	0	12	5	7	12
		Percent	0.00%	75.00%	31.25%	43.75%	75.00%
	Moderate (3,4)	Frequency	7	4	11	9	4
		Percent	43.75%	25.00%	68.75%	56.25%	25.00%
	Severe (5,6)	Frequency	9	0	0	0	0
		Percent	56.25%	0.00%	0.00%	0.00%	0.00%
8.1 to 10	Mild (0,1,2)	Frequency	0	9	3	9	9
/ears		Percent	0.00%	75.00%	25.00%	75.00%	75.00%
	Moderate (3,4)	Frequency	6	3	9	3	3
		Percent	50.00%	25.00%	75.00%	25.00%	25.00%
	Severe (5,6)	Frequency	6	0	0	0	0
		Percent	50.00%	0.00%	0.00%	0.00%	0.00%
0.1 to	Mild (0,1,2)	Frequency	1	9	8	10	11
2 years		Percent	8.33%	75.00%	66.67%	83.33%	91.67%
	Moderate (3,4)	Frequency	6	5	5	4	3
		Percent	50.00%	41.67%	41.67%	33.33%	25.00%
	Severe (5,6)	Frequency	7	0	1	0	0
		Percent	58.33%	0.00%	8.33%	0.00%	0.00%

In the age group of 6 to 8 year and 10.1 to 12 years, nose symptoms were severely affected as compared to age group 8.1 to 10 years where they were moderately affected. Eye symptoms and activity limitation were mildly affected in all 3 age groups. Practical problems were less in older children i.e. 10.1 to 12 years whereas, children aged 6-10 years were moderately affected (Table 6).

DISCUSSION

Allergic Rhinitis (AR) is one of the common chief complaints presented to a primary care physician. The prevalence of the disease is mostly seen in developed countries of the world. This could be due to the paucity of medical literature on Pediatric AR from India and other developing countries. Now even in India, the burden of the disease has increased with more incidence of Allergic Rhinitis being noted.

In our study, there was male preponderance (59.5% males and

40.5% females). Similar results were reported in the studies done by Shyna et al in India and Montoro et al in Spain which had 60% and 58.7% males respectively and 40% and 41.3% females respectively.⁵⁶ This is in contrast to the study done by Akarcay et al in Maltya and Turkey which showed female preponderance but the study included patients between 6 to 20 years of age.⁷

AR presents with varied symptoms in pediatric patients: Rhinorrhoea, sneezing, nose block, cough and itchy throat/postnasal discharge (PND) were common in our study population. Headache was present in two-thirds of patients and daytime sleep seen in one-third of patients is quite worrisome and can affect a child's school performance. This is in contrast to the study done by Lahiri KR et al where headache and daytime sleep was not significant.[®] Halitosis (Bad breath) was observed in one-fourth of the patients which can have a major *impact* on a child's mental and physical well-being.

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Association of comorbidities plays an important role in AR. Most of the comorbid conditions are ENT problems which in turn may precipitate or complicate AR. Postnasal discharge, pharyngotonsillitis and bronchial asthma were common comorbid conditions observed in nearly half of our patients. Conjunctivitis was seen only in one-third of the patients which was different from the results observed by Lahiri et al, wherein more than half of the patients were affected with the same.⁸ Behavioral abnormalities, hypernasality, allergic dermatitis (eczema), otitis media, undernourishment and speech abnormality were uncommon comorbid conditions observed in our study.

Thus, treatment of AR requires a multidisciplinary approach (involving pediatric allergists, otolaryngologists, respiratory pediatricians, dermatologists, ophthalmologists, etc.)⁹

Though mechanisms such as naso-bronchial reflex, rhinovirus adhesion theory, postnasal drip, and migration of sensitized T cells have been proposed to explain the allergy-asthma link, Guerra et al have shown that rhinitis alone is an independent risk factor for adult-onset asthma.^[10] It appears that AR probably exacerbates asthma and treatment of AR must be emphasized while optimizing treatment of asthma.⁹

In our study, allergic shiners was a common examination finding in more than half of the patients. Allergic gape and inferior turbinate hypertrophy were seen in nearly forty percent of patients while Darrier's line and deviated nasal septum were uncommon findings. However, Lahiri et al observed deviated nasal septum and inferior turbinate hypertrophy as the most common examination findings.⁸ Nasal polyp was not seen in any of our patients of AR.

Out of all the domains of Paediatric Rhinoconjunctivitis Quality of Life, nose symptoms (stuffy/blocked nose, sneezing, runny nose, itchy nose) was significantly affected in nearly all the patients. Practical problems (bothered to rub eyes and nose, blow nose, carry Kleenex, taking medication for allergies and embarrassment) were affected in two-thirds of patients, thus indicating that these symptoms also should be given due attention and must be addressed. Other symptoms (thirst, scratchy/itchy throat, headache, feeling tired, not well all over and irritable), eye symptoms (itchy eyes, watery eyes, swollen/puffy eyes, sore eyes), activity limitation (playing outdoor, hard to get sleep, waking up at night and inattentiveness) were not affected much in our study.

In our study, nose symptoms were severely affected in all the age groups (6 to 8, 8 to 10, 10 to 12), but eye symptoms and activity limitation were mildly affected. This was statistically significant although the sample size was small. Practical problems were moderately affected in 6 to 8 and 8 to 10 years of age however it was mildly affected in 10 to 12 years. Other symptoms as mentioned above were moderately affected in 6 to 8 years but mildly affected in 8 to 10 and 10 to 12 years.

One of the aims in the management of patients with allergic rhinitis should be the improvement in the quality of life and our study suggested significant impairment of the same. It has been recommended that clinicians should incorporate the quality of life parameters in the clinical assessment of patients with allergic rhinitis. Juniper et al have devised a validated questionnaire to measure health-related quality of life in both pediatric and adolescent patients of allergic rhinitis.¹¹ Treatment of AR should also demonstrate improvement in the quality of life parameters and rational comparisons of various treatment modalities is thus possible.¹²

CONCLUSION

Comorbidities like Post-nasal discharge, pharyngotonsillitis and bronchial asthma were the commonest problem associated with allergic rhinitis in our study. It is important to look for such comorbid conditions in a child with AR as this is commonly overlooked and can largely impact the quality of life. Also, a clinician should timely assess the patient with a simple questionnaire such as RCQOL for a holistic approach towards the treatment of the patient for a perfect outcome.

LIMITATION

Patients of Allergic Rhinitis were not diagnosed with Skin prick test but rather diagnosed clinically depending on signs and symptoms. Cases and controls of allergic rhinitis along with their comorbidities could have been taken to prove how the quality of life can significantly affect a patient with AR. Also, a follow-up study was not done to assess the change in the quality of life when started on treatment, after the effect of steroids and antihistamines

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