

Prevalence of Clinical Diagnosis and Treatment of Allergic Rhinitis According to the 2010 Aria Guidelines 2010 in the School Population of Cartagena City, Colombia

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Abstract

Allergic Rhinitis is a public health problem due to the impact on quality of life and work performance, school and social integration of people who have it. In Latin America it is usually underestimated by patients and underdiagnosed and undertreated by physicians. The initiative Allergic Rhinitis and its Impact on Asthma (Allergic Rhinitis and its Impact on Asthma, ARIA) has been developed together with the World Health Organization (WHO) and is intended as an updated reference guide, intended for the specialist and the general practitioner. We performed a cross-sectional study in school children in the city of Cartagena, Colombia, to assess the presence of symptoms, clinical diagnosis and treatment of allergic rhinitis during the period, January 2010 to January 2011. The prevalence of symptoms of allergic rhinitis was 17.5%, the prevalence of symptoms of allergic rinoconjunctivitis was 15.1%, the prevalence of diagnostic allergic rhinitis was 6.4%, the prevalence of asthma diagnosis in patients with symptoms of allergic rhinitis was 34.1%, the prevalence of drug treatment for allergic rhinitis was 26.7% and the prevalence of use allergen-specific immunotherapy was 31%. Cartagena, Colombia ranks as one of the 5 cities with the highest percentage of people affected by allergic rhinitis and as in other parts of Latin America, allergic rhinitis is usually underestimated by patients and underdiagnosed and undertreated by physicians. Patients are not receiving treatment according to the ARIA Guidelines schemes following the principles of evidence-based medicine. It is important to educate undergraduate and graduate who treat most patients to follow treatment strategy guideline recommendations and to achieve improved quality of life of people with allergic rhinitis.

Keywords: Allergic rhinitis; Prevalence; ARIA

Introduction

Allergic rhinitis is defined as an inflammation of the nasal mucosa IgE-mediated after exposure to an allergen specific. Represent a public health problem due to the impact on quality of life and work performance, school and social integration of people with the disease [1]. It is a very common disease worldwide affecting at least 10 to 25% of the population and its prevalence is increasing [2]. In Latin America, it is usually underestimated by patients and underdiagnosed and undertreated by physicians [3]. The initiative allergic rhinitis and its impact on asthma (Allergic Rhinitis and its Impact on Asthma, ARIA) has been developed with the World Health Organization (WHO) and is intended as an updated reference guide, designed for the specialist and the GP. Its objectives are: To update the knowledge of health professionals on allergic rhinitis; highlight the impact of allergic rhinitis on asthma; provide evidence-based approach to diagnose the disease and provide evidence-based approach to treat the disease [4]. This study aims to establish whether patients with symptoms consistent with allergic rhinitis have been diagnosed and if they receive treatment according to the schemes of guidelines prepared by following the principles of evidence-based medicine.

Objectives

- To establish the prevalence of clinical diagnosis of allergic rhinitis in school population.
- To establish the prevalence of treatment of allergic rhinitis in school population.

Materials and Methods

We performed a cross sectional study in 8 schools in the city of Cartagena, Colombia, in patients 1 to 20 years, using a questionnaire developed by the authors, based on other existing questionnaires for the study of allergic diseases and in the Review ARIA the Guides to evaluate the presence of symptoms, clinical diagnosis and treatment of allergic rhinitis during the period January 2010 to January 2011. The questionnaires were resolved by children accompanied by their parents.

Questionnaire study of prevalence of diagnosis and treatment of allergic rhinitis

- Do you have in regular form nasal symptoms such as sneezing, watery runny nose, nasal obstruction or nasal itching, not associated with common cold or flu (without fever)?

- Do you have in regular form in the last year nasal symptoms such as sneezing, watery runny nose, nasal obstruction or nasal itching, not associated with common cold or flu (without fever)?
- Do you present these problems when have exposure to house dust mites?
- Have ever doctor told you that have allergic rhinitis?

Clinical classification allergic rhinitis

- Do you present symptoms <4 days for week or <4 weeks for month?
- Do you present symptoms >4 days for week or >4 weeks for month?
- The symptoms affect sleep?
- The symptoms produce impairment of daily activities, sport, leisure, impaired work and school?
- Troublesome symptoms?
- The symptoms are permanent or casual (episodes)?
- The symptoms dominate any moment of day?
- Have you ever diagnosed allergic rhinitis?
- Have you ever diagnosed other diseases? Which?
- What treatment you receive or have received to treat the symptoms?
- Do you receive or have received Allergen-specific immunotherapy?

If parents in the company of their children answered affirmatively questions 1 and 2, they continued with the questionnaire. If the answers to questions 1 and 2 were negative, the patient was considered to have no rhinitis and it was finalized. If the answer to question 2 was affirmative, the patient was qualified as having a history compatible with non-infectious rhinitis and the next question was passed. If the answer to the question 3 was negative, the possibility of the presence of allergic rhinitis in the patient was ruled out. If they answered questions 2 and 3 affirmatively, the diagnosis of allergic rhinitis was established. If only question 1 and 2 were affirmative, the patient was considered to have a history suggestive of non-allergic infectious rhinitis. After having answered affirmatively to the first 3 questions, they continued solving the questionnaire until the end.

Statistical analysis

Baseline characteristics were summarized as means \pm standard deviations for continuous variables and percentages for categorical or dichotomous variables. Univariate analysis for categorical variables to find association with the prevalence of symptoms and clinical diagnosis of allergic rhinitis was performed with the chi square test. We considered a p value <0.05 was considered significant. For all calculations, we used STATA SE version 10.1.

Results

The study included 920 students from 8 schools in the city of Cartagena, Colombia. 42 students of the Colegio Montessori (4.57%), 51 of the Colegio Caminos del Coral (5.54%), 72 of the Colegio Fernando de la Vega (7.83%), 92 of the Colegio George Washington (10%), 140 del the Colegio Omaira Garzon Sanchez Omaira (15.22%), 153 of the Colegio Mixto La Popa (16.63%), 172 of the Colegio Salesiano (18.7%) and 198 of the Instituto Skinner (21.5%).

The mean age was 11.9 years (SD \pm 0.10 years). Of the students surveyed, 550 are male (59.7%). 425 students belonging to

socioeconomic 1-2 (46.2%), 323 belong to socioeconomic 3-4 (35.1%) and 171 belong to socioeconomic 5-6 (18.5%). 118 students (12.8%) reported exposure to household dust mites. 48 students (5.22%) reported living with a smoker in their homes. 185 students (20.11%) reported having an animal as a pet, 129 (69.7%) have a dog, 30 (16.2%) have a cat, 19 (10.2%) are birds and 17 (9.1%) have other animals.

Prevalence of symptoms and clinical diagnostics of allergic rhinitis

Of the students surveyed, 161 have had symptoms of allergic rhinitis in the last year (17.5%) and 139 have had rinoconjuntivitis allergic symptoms (15.11%). 59 (6.4%) of 161 students who have had symptoms of allergic rhinitis in the past year, we have conducted clinical diagnosis of allergic rhinitis (36.6%) and 55 of them have been diagnosed asthma (34.1%) 33 were diagnosed by a general practitioner (59.9%) and 9 by an allergist (15.2%). The rest were diagnosed by specialists in Pediatric, Otolaryngology and Pulmonology (28.9%). 120 of those who have had symptoms of allergic rhinitis in the past year, suffering from intermittent allergic rhinitis (74.5%) and 41 suffering from persistent allergic rhinitis (25.5%).

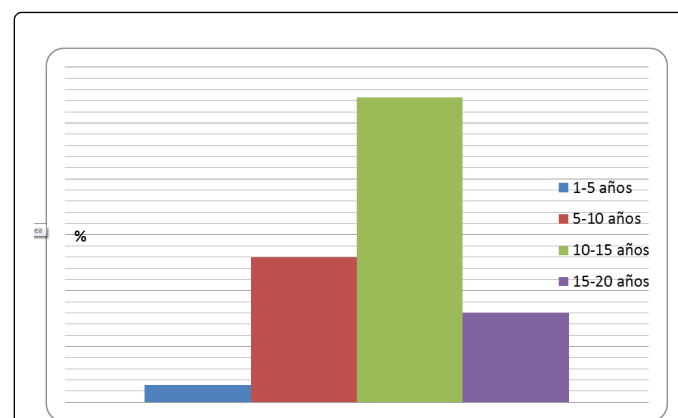


Figure 1: Prevalence of symptoms and allergic rhinitis for age group

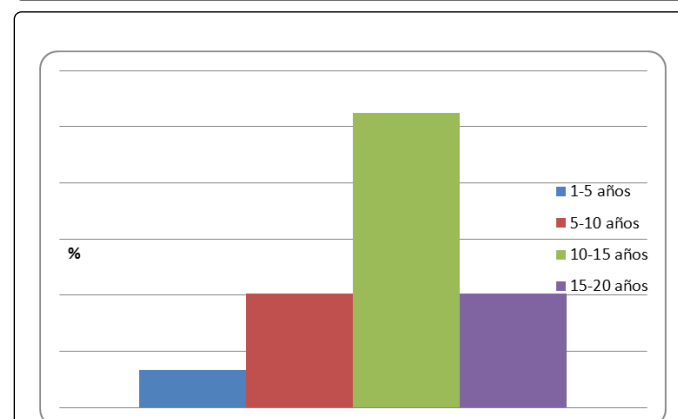


Figure 2: Prevalence of clinical diagnosis of allergic rhinitis for age group

Baseline characteristics, factors Associated with symptoms and clinical diagnosis of allergic rhinitis

The prevalence of symptoms (54.6%) and clinical diagnosis (52.5%) of allergic rhinitis was higher in the age group between 10 and 15. This estimate was not statistically significant for the prevalence of symptoms although it was for the clinical diagnosis allergic rhinitis (54.6% vs. symptoms 45.4%, $p = 0.93$ /clinical diagnosis 52.5% vs. 47.5, $p = 0.03$) (Figures 1 and 2). There were no significant differences in the prevalence of symptoms and diagnosis of allergic rhinitis according to gender (Symptoms Male 18.3% vs. Female 16.2%, $p = 0.40$ /Clinical diagnosis 7.4% vs. 4.8%, $p = 0.11$). Prevalence of symptoms and clinical diagnosis allergic rhinitis in the last year was significantly higher in socioeconomic status 5-6 (23.9% vs. symptoms 16%, $p = 0.01$ /clinical diagnosis 11.1% vs. 5.3%, and $p = 0.005$) (Table 1). The presence of symptoms during house dust mite exposure was significantly associated with lower prevalence of allergic rhinitis symptoms in the last year (47.2% vs. 52.8%, $p < 0.05$). Living with pets was significantly associated with lower prevalence of allergic rhinitis symptoms in the last year (35.4% vs. 64.6%, $p < 0.05$), mainly dogs (allergic rhinitis symptoms in the last year 27, 1% vs. 72.9, $p = 0.002$) and birds (allergic rhinitis symptoms in the last year 42.1% vs. 67.9%, $p = 0.004$). There were no significant differences in the presence of symptoms of allergic rhinitis in the last year, among those who reported living with a smoker in their homes and those who reported not living with any smoker (5.5% vs. 94.4%, $p = 0.81$) (Table 2).

Baseline Characteristics	Symptoms and Allergic Rhinitis	Clinical Diagnosis of Allergic Rhinitis
Sex (Male vs. Female)	(18.3%) vs. (16.2%) $p = 0.40$	(7.4%) vs. (4.8%) $p = 0.11$
Socioeconomic Status (5-6 vs. 1-4)	(23.9%) vs. (16%) $p = 0.01$	(11.1%) vs. (5.3%) $p < 0.05$
Age (10-15 year vs. other age)	(54.6%) vs. (45.5%) $p = 0.93$	(52.5%) vs. (47.5) $p = 0.03$

Table 1: Baseline characteristics and prevalence of symptoms and clinical diagnosis allergic rhinitis

Factors Associated	Symptoms Allergic Rhinitis (+)	Symptoms Allergic Rhinitis (-)	P value
House dust mite exposure	47.2%	52.8%	<0.05
Living with pets	30.8%	69.2%	<0.05
Living with a smokers	5.5%	94.4%	0.81

Table 2: Factors associated symptoms allergic rhinitis

Prevalence of allergic rhinitis treatment

43 of the 161 students who have had symptoms of allergic rhinitis in the last year, receiving drug treatment for allergic rhinitis (26.7%), 26 are commercial drugs (60.4%). 20 receive antihistamines (12.4%), 6 nasal steroids (3.7%) and 18 other drugs such as antibiotics, cold remedies, homeopathic medicines or saline nasal washes (11.1%). None of the students received antileukotrienes. Allergen-specific immunotherapy receiving 50 (31%). 118 of the 161 students did not

receive treatment (73.2%) (Table 3). 13 patients with intermittent allergic rhinitis are antihistamines (10.8%), 3 received nasal steroids (2.5%), 11 receiving other medications such as antibiotics, cold remedies, homeopathic medicines or nasal wash with saline (9.1%) and 18 receiving immunotherapy specific allergen (18.3%). 7 patients with persistent allergic rhinitis are antihistamines (17%), 2 receiving nasal steroids (4.8%), 1 receiving other medications such as antibiotics, cold remedies, homeopathic medicines or nasal wash with saline (2.4%) and allergen-specific immunotherapy are specified 14 (14.6%).

Intermittent Mild	Intermittent Moderate-Severe	Persistent Mild	Persistente Moderate-Severe
Nasal steroids (3.7%)			
Antileukotrienes (0%)			
Antihistamines (12.4%)			
Allergen-specific immunotherapy (31%)			
Not receive treatment (73.2%)			

Table 3: Prevalence of treatment of the allergic rhinitis ARIA Guidelines

Discussion

Allergic Rhinitis is a very common disease worldwide affecting at least 10 to 25% of the population and its prevalence is increasing [2]. Prevalence rates vary widely world wide ranging between 1.3 and 52% in clinical studies.

In the United States, it is estimated to affect between 20 and 30% of adults and about 40% of children. In research conducted in 6 countries of the European Union, allergic rhinitis affects 24% of the population. In the study by ISAAC (International Study of Asthma and Allergy in Childhood) in Latin America, says the country with the highest prevalence of allergic rhinitis is Paraguay with 45.1%, followed by Chile with 22.2%, while Brazil and Argentina recorded 16.9% and 15.9% respectively.

Dennis R et al. [5] estimated in 2004, a prevalence of allergic rhinitis 22.6% in Colombia and cities with the highest percentage of people affected by allergic rhinitis were Bucaramanga (38%), Medellín (32.4%), Bogotá (23.7%), Barranquilla (16.2%) and San Andrés (18.3%). Caraballo et al. [6] estimated in 1992, a prevalence of allergic rhinitis in Cartagena, Colombia from 16.4% in a population between 1 and 98 years with a mean of 21.1 years. Epidemiological studies have identified an increased prevalence of this disease over the past 20-30 years [1]. In our study, the estimated prevalence of allergic rhinitis symptoms in Cartagena, Colombia from 17.5% in school population between 1 and 20 years old, with a mean of 11.9 years, noting a slight increase in the prevalence and positioning the city within the 5 cities with the highest percentage of people affected by allergic rhinitis.

It has been observed that most patients have symptoms before 20 years of age, with a higher incidence between 12 and 15 years. Given this, it is considered that 10% of boys and 30% of adolescents suffer from allergic rhinitis [1]. In our study, the prevalence of symptoms (54.6%) and clinical diagnosis (52.5%) of allergic rhinitis was higher in the age group between 10 and 15. This estimate was not statistically significant for the prevalence of symptoms although it was for the

clinical diagnosis allergic rhinitis (Symptoms 54.6% vs. 45.4%, p 0.93/clinical diagnosis 52.5% vs. 47.5, p 0.03).

It has been hypothesized that the reduction in number and severity of respiratory infections in children with better living conditions and nutrition may lead to a reduced synthesis of interferon gamma and Th2 cells and stimulate production of IL-4 with therefore increasing the synthesis of IgE (hygiene hypothesis) [1]. The "hygiene theory" proposes that environmental factors act as "protectors" which are of low occurrence in industrialized countries. Proposed protective factors are more children; high occurrence of gastrointestinal parasites, increased annual burden of acute respiratory infections virus, and presence of bacteria in early respiratory and digestive tract and poor standards of hygiene. In Latin America, these "protective factors" are not applicable because in most countries of the region, these factors are present and yet the prevalence of allergic diseases is high [7]. In contrast, the study of Herrera et al. [8], the prevalence of allergic rhinitis in pre-school population in the city of Cali, Colombia, was significantly higher in higher socioeconomic strata (29.3% vs. 8.1%, p 0.002). In our study, the prevalence of symptoms and clinical diagnosis of allergic rhinitis in the last year was significantly higher in socioeconomic status 5-6 (Symptoms 23.9% vs. 16%, p 0.01/11.1% clinical diagnosis vs. 5.3%, p 0.005).

An important factor is the comorbidity with asthma, as has been observed that a high percentage of patients with allergic rhinitis have asthma (20-40%), whereas 30-50% of asthma patients have allergic rhinitis. The prevalence of asthma in patients with allergic rhinitis was 30.6% in the study of Caraballo et al. [6] in 1992. In our study, the prevalence of asthma in patients with allergic rhinitis in Cartagena, Colombia was 34.1%, showing a slight increase in the prevalence and corroborating the relationship between allergic rhinitis and asthma.

In Latin America, allergic rhinitis is usually underestimated by patients and underdiagnosed and undertreated by doctors [3]. In the Study of Dennis et al. [5], prevalence of physician-diagnosed allergic rhinitis was 7%. In our study, the prevalence of allergic rhinitis in Cartagena, Colombia was 6.4%, only 36.6% of patients with symptoms of allergic rhinitis, have been made diagnosis of allergic rhinitis. Only 26.7% of patients with allergic rhinitis symptoms in the past year in Cartagena, Colombia, receiving any treatment, noting the persistence of underestimation, underdiagnosis and undertreatment of disease that generates a significant impact on quality of life and work performance, school and social integration of people who have it.

The initiative allergic rhinitis and its impact on asthma (Allergic Rhinitis and Its Impact on Asthma, ARIA) has been developed with the World Health Organization (WHO) and is intended as an updated reference guide, designed for the specialist and the GP. In the 2010 ARIA Guidelines review [9], recommended the complete removal of snuff smoke in the air (passive smoke) of children and pregnant women (Strong recommendation/Quality of evidence very low). In our study no significant differences were estimated in the presence of symptoms of allergic rhinitis in the last year, among those who reported living with a smoker in their homes and those who reported not living with any smoker (5.5% vs. 94.4% p 0.81), however, the relationship between allergic rhinitis and asthma, this estimate is consistent with the degree of recommendation of the 2010 ARIA Guidelines, the low evidence of the association between allergic rhinitis and smoke snuff and the balance between the desired and undesired effects of reduced exposure to smoke snuff.

In patients with allergic rhinitis and/or asthma sensitive to allergens of house dust mites, we recommend do not the administration and do not use chemicals or preventive methods available to reduce exposure to house dust mites by doctors and patients (Strong recommendation/Quality of evidence floor), unless it is a formal clinical research context. He suggests using a multifaceted program of environmental control in urban households to improve symptoms of asthma in children (Recommendation conditional/Quality of evidence very low). In our study, the presence of symptoms during house dust mite exposure was significantly associated with lower prevalence of symptoms of intermittent or persistent allergic rhinitis in the last year (47.2% vs. 52.8%, p <0.05). This estimate is consistent with the degree of recommendation of the 2010 ARIA Guidelines, the low quality of evidence on the effectiveness of measures to reduce exposure to household dust mites and the suggestion mainly in children at high risk of developing Asthma are those with at least one parent or sibling with asthma or other allergic diseases.

It is suggested that there should be no special prevention regarding pet exposure in infants and preschoolers (Conditional recommendation/Low quality of evidence). In our study, living with pets was significantly associated with lower prevalence of allergic rhinitis symptoms in the last year (35.4% vs. 64.6%, p <0.05). This estimate is consistent with the degree of ARIA recommendation of the Guide, taking into account that physicians and patients may opt for a reasonable alternative action given the circumstances, including other family members aware.

It is recommended the use of antihistamines old and new generation for the treatment of allergic rhinitis (Strong recommendation/Quality of evidence). In our study, only 26.7% of patients with symptoms of allergic rhinitis that have received pharmacological treatment only 12.4% have received antihistamines.

It is recommended the use of nasal steroids for the treatment of persistent allergic rhinitis in adults (Conditional recommendation/Moderate quality of evidence) and children (Recommendation conditional/Low quality of evidence). In our study, only 4.8% of patients with persistent allergic rhinitis symptoms have received nasal steroids.

It is recommended the use of allergen-specific subcutaneous immunotherapy for the treatment of adult seasonal allergic rhinitis (intermittent) (Conditional recommendation/Quality of evidence moderate) and persistent allergic rhinitis caused by house dust mites (Conditional recommendation/Quality evidence floor). In our study, only 14.6% of patients with persistent symptoms of allergic rhinitis have received allergen-specific immunotherapy.

It is recommended the use of antileukotrienes for treatment of allergic rhinitis associated with asthma, in patients who prefer not to use or cannot use steroids or children whose parents do not accept the use of steroids (Conditional recommendation/Quality of evidence moderate). In our study, none of the students have received antileukotrienes.

Conclusion

In the school population of Cartagena, Colombia from January 2010 to January 2011, the prevalence of symptoms of allergic rhinitis was 17.5%, the prevalence of symptoms of allergic rinoconjunctivitis was 15.1%, the prevalence of diagnostic allergic rhinitis was 6.4%, the prevalence of asthma diagnosis in patients with symptoms of allergic

rhinitis was 34.1%, the prevalence of drug treatment for allergic rhinitis was 26.7% and the prevalence of use of allergen specific immunotherapy was 31%. Cartagena, Colombia ranks as one of the 5 cities with the highest percentage of people affected by allergic rhinitis and as in other parts of Latin America, allergic rhinitis is usually underestimated by patients and underdiagnosed and undertreated by physicians. Patients do not receiving treatment according to the 2010 ARIA Guidelines schemes following the principles of evidence-based medicine. It is important to the education of undergraduate and graduate who treat most patients to the therapeutic strategy follow guideline recommendations and achieve improved quality of life of people with allergic rhinitis.

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