

Original Research Article

Symptoms of allergic rhinitis in children with adenotonsillar hypertrophy

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ABSTRACT

Background: A few studies have been performed on whether allergic rhinitis is a cause of adenotonsillar hypertrophy. The aim of this study was to determine the symptoms of allergic rhinitis in children with hypertrophy.

Methods: This descriptive cross-sectional study has been conducted on 150 patients' candidates for adenotonsillectomy. The necessary information was collected through checklists and patient records.

Results: A total of 150 patients were included in the study. In terms of gender, the highest frequency was related to boys (66.7%). Most of patients lived in the Ardabil (66.7%). The mean age of the subjects was 7.55 years. The highest frequency was related to the history of recurrent middle ear infection in children with 73 cases (48.7%). The lowest frequency was jointly assigned to the history of taking anti-allergy drugs and the history of recurrent itching in the child each with 21 cases (14%). There was no significant relationship between any of the studied symptoms and age and gender of patients. Most of patients with 90.7% had allergic rhinitis symptoms.

Conclusions: Results showed that frequency of symptoms of allergic rhinitis in patients with adenotonsillar hypertrophy was in moderate level and the rate of it in studied patients was similar to its rate among general population.

Keywords: Rhinitis, Allergic rhinitis, Adenotonsillar hypertrophy, Adenotonsillectomy

INTRODUCTION

Rhinitis describes a group of diseases that are associated with inflammation in the nasal epithelium and are characterized by sneezing, itching, runny nose and congestion. There are several causes of rhinitis in children but in about half of cases, allergies cause rhinitis.¹ Allergic rhinitis (AR) is a clinical hypersensitivity of the nasal mucosa to foreign substances mediated by IgE Abs. The prevalence of AR is between 10-20% and yearly it affects 20-40 million people in the United States. The classic symptoms of AR including recurrent attacks of sneezing, itching, runny nose, nasal congestion and tears that occur after exposure to an allergen.² The diagnosis of AR is mainly based on history. A history of rhinitis should include questions about the family history of allergic

diseases such as allergic rhinitis, asthma and atopic dermatitis, because a positive family history of an allergic disease increases the likelihood that the patient's symptoms are due to AR.^{3,4}

A 2007 study by Saltz in Budapest, the capital of Hungary-Europe, found that the 12-month prevalence of AR in children aged 6-12 years was 14.9% higher than in other European countries. The prevalence of AR in childhood ranges from 2.2% to 45.1%.⁵

According to another study conducted in Ekiti (a state in West Nigeria, Africa) from 2015 to 2017, the prevalence of allergic rhinitis in children was 6.1%. Allergic rhinitis peaked in the pre-school age group (1-5 years) and was about 47.9%.⁶

Adenotonsillectomy is the most common surgery in children, but the underlying cause of adenotonsillar hypertrophy (ATH) is still unknown. Some research has shown that allergies may be a risk factor for adenotonsillar hypertrophy. Allergy control may play a role in reducing adenotonsillectomy in children suffering from allergic reactions and adenotonsillar hypertrophy.⁷

Serious complications after tonsillectomy and adenoid surgery include: pain, bleeding, airway obstruction, postoperative pulmonary edema, velopharyngeal insufficiency (VPI), nasopharynx stenosis and death. High precision in surgical procedures and modern advances in anesthesia have clearly reduced the incidence of adenotonsillectomy complications. According to Paradise, the overall total rate of complications was 14%. All of these complications have been self-limiting.⁴

Little studies have been done about whether AR is a cause of ATH. The importance of this issue is in reducing the need for adenotonsillectomy in the population of children with allergic rhinitis, which can reduce the incidence of adenotonsillar hypertrophy by early detection of allergic rhinitis and treatment and control and it also took steps to reduce adenotonsillectomy surgery and of course the complications of this surgery in the pediatric population.

METHODS

Study design and participants

This is a descriptive cross-sectional study that was performed on 150 candidates undergoing adenotonsillectomy from October 2019 to September 2020. Sampling method was a census and included all. Cases with under 18 years of age and candidate undergoing adenotonsillectomy were included in the study with full satisfaction.

Data collection and statistical analysis

Their information was collected through checklists and patient records and also interview with patients' parents. In the present study, demographic questionnaire (age and gender) and patient records before and after surgery were used to collect data, as well as by telephone call with children waiting for surgery. Finally, the data were entered into statistical package for the social sciences (SPSS) 22 and analyzed by statistical methods such as graph and table and also using statistical tests such as Chi-square and t-test.

RESULTS

The highest frequency was related to boys (66.7%). Most patients lived in Ardabil (66.7%). In terms of father's job, the highest number was related to freelance job with 62.67% (Table 1).

The highest frequency was related to the history of recurrent middle ear infection in children with 73 cases

(48.7%). The lowest frequency was jointly attributed to the history of taking anti-allergy drugs and the history of recurrent itching in the child each with 21 cases (14%) (Table 2).

None of the studied symptoms of AR had not a significant relationship with the age and gender of the patients. A history of recurrent middle ear infection was significantly associated with the patient father's occupation. So that the children of people with free jobs were less exposure this symptom than the children of people with laboring. Also, the history of recurrent redness in the children was significantly related to the job of the patient's father. This complication was observed in the children of people non-employee jobs less than other jobs. The history of recurrent tears of the child was significantly associated with the place of residence. This symptom was less observed in people living in Ardabil and more in people living in the city. The results showed that the majority of patients, 54% of them, had only 1 to 3 symptoms of allergic rhinitis and 36.67% of patients had 4 or more symptoms of allergic rhinitis and only 9.3% did not show any symptoms (Figure 1).

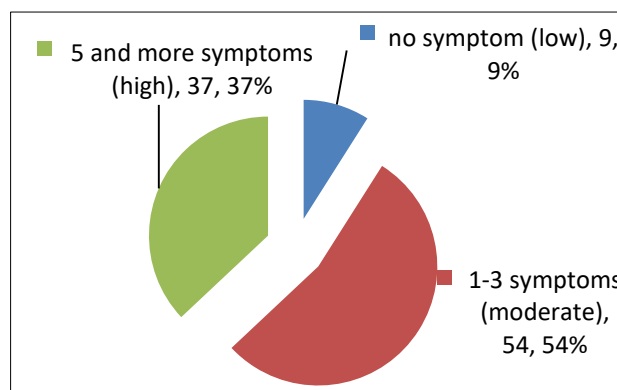


Figure 1: Frequency of symptoms in the studied patients.

Table 1: Frequency distribution of study demographic variables.

| Variables | N | % |
|---------------------------|------------------|-------|
| Gender | | |
| Boy | 100 | 66.7 |
| Girl | 50 | 33.3 |
| Address | | |
| Center of the province | 100 | 66.7 |
| City | 21 | 14 |
| Village | 29 | 19.3 |
| Father's job | | |
| Free | 94 | 62.67 |
| Treatment staff | 5 | 3.33 |
| Agriculture and livestock | 4 | 2.67 |
| Labouring | 27 | 18 |
| Employee | 20 | 13.33 |
| Age (years) | 7.55±2.18 (3-20) | |

Table 2: Evaluation of the frequency of allergic rhinitis symptoms in the studied patients.

| Symptoms | n | % | Rank |
|---|----|------|------|
| Child exposure to secondhand smoke | 54 | 36 | 3 |
| History of allergies in family members (including eczema, asthma, food, medicine) | 54 | 36 | 3 |
| History of taking anti-allergy drugs | 21 | 14 | 10 |
| History of recurrent middle ear infection in the child | 73 | 48.7 | 1 |
| History of recurrent ear itching in the child | 28 | 18.7 | 8 |
| History of recurrent nasal itching in the child | 43 | 28.7 | 5 |
| History of frequent runny nose | 67 | 44.7 | 2 |
| History of recurrent sneezing attacks in the child | 49 | 32.7 | 4 |
| History of recurrent tears in the child | 42 | 28 | 6 |
| History of recurrent eye itching in the child | 21 | 14 | 10 |
| History of recurrent redness in the child | 37 | 24.7 | 7 |
| History of recurrent itching in the baby's palate and throat | 27 | 18 | 9 |

DISCUSSION

The present study investigated the prevalence of allergic rhinitis symptoms in children with adenotonsillar hypertrophy who are candidates for surgery and 36.67% of patients had 4 or more symptoms of allergy and only 9.3% did not show any symptoms. Norhafizah et al conducted a study on the prevalence of allergic rhinitis in children with otitis media with effusion in Malaysia. The prevalence of allergic rhinitis in this study was noted to be 80.3%. Among these children, dust mites appeared to be the most common allergen (87.7%).

Another risk factor appeared to be families with more than four member's per-household (96%).⁸ The answer to the question of rhinitis history was 429 (14.3%) in the 6-7-year group and 822 (28.2%) in the 13-12-year group, the difference between the two age groups was significant. It was also significantly higher in males than females. However, our study was performed on children with adenotonsillar hypertrophy who were candidates for surgery and found no association between the prevalence of symptoms and age and gender among the subjects. This could be an important consequence, as the prevalence of allergic rhinitis symptoms in the general population of children is associated with older age and male gender, however in children with adenotonsillar hypertrophy, attention to the age and gender of patients does not help determine the prevalence of these symptoms and is not very important.

In a study by Sultész et al, the prevalence of current allergic rhinitis was 29.3% (1043) among studied people.⁹ The relationship between allergic rhinitis and gender and occupation was reported to be significant, but not significantly related to educational level and marital status. In this study, the highest frequency of the disease with allergic rhinitis was related to sinusitis (31.2%) and then nasal polyps (18.3%) however, the association between allergic rhinitis and adenoid hypertrophy is weak, while in our study it was shown that the symptoms of allergic

rhinitis in these patients are moderate, but the reason for this difference may be a difference in age group, in the study of Sultész et al, the average age was 40.44 years and our study was performed among the population of children with adenotonsillar hypertrophy (average age 7.55 years).⁹ A study by Colavita et al, entitled allergic rhinitis and adenoid hypertrophy in children: Is adenoidectomy always useful done in 2015.¹⁰

Allergic rhinitis and adenoid hypertrophy are common in children and are often associated with this study, the study found. Improvement of respiratory symptoms and decrease in adenoid volume after antihistamine treatment have been shown. In our study, a moderate prevalence of allergic rhinitis symptoms was found in patients with adenotonsillar hypertrophy.

Limitations

From the limitations of the present study, it can be pointed out that in this study, in terms of age group and study population, there was a slight difference between this study and some studies, which could not be compared more accurately.

CONCLUSION

Considering that most of the patients in this study had 1 to 3 symptoms of allergic rhinitis and children with 4 symptoms and more made up only 36.67% of this study, the frequency of allergic rhinitis symptoms in patients with adenotonsillar hypertrophy was moderate and without significant differences were obtained with normal populations. It is suggested that a study with the same subject but with a larger statistical population and after the completion of the corona pandemic in the country or other provinces to confirm or change the results of this study. Studies should also be designed to investigate the association between the symptoms of allergic rhinitis and other diseases of the ear, nose and throat, including

sinusitis and nasal polyps to compare with the results of previous similar studies.

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