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Treatment of Allergic Patients with Adenotonsillar Hypertrophy: Surgery Versus Medication Therapy

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Abstract

Background: Adenotonsillar hypertrophy (AH) is the most common cause of respiratory obstruction of the upper airway, and tonsillectomy is one of the most frequently performed surgical interventions in children. It has been proposed that medical treatment in an allergic state could decrease the size of AH. Therefore, this study aimed to compare the outcomes of surgery and medical therapies among allergic children with AH. **Materials and Methods:** This case-control study was carried out on 68 children with AH in an allergic state who were referred to the Pediatrics Hospital of Tabriz Medical University. They were divided into two groups and matched according to sex, age, and primary clinical signs and symptoms. Patients received surgery (case group) and medication (control groups) for treated AH. Finally, they were compared according to the results of treatment and recurrence rate. **Results:** The mean age of children in the case and control groups was 6.3±2.3 and 6.8±2.1 years, respectively. There was no significant difference in improving clinical signs and symptoms between the two groups. In the case group, no improvement of clinical signs and symptoms was observed in one patient compared with two patients in the control group. In the control group, no decrease in the size of the tonsils was observed in three patients. Recurrence of clinical signs of AH was observed in six (17.6%) patients of the control group, and there was a significant difference between the two groups (P<0.001). **Conclusion:** Our findings showed no significant differences in the outcomes of the two therapeutic methods for AH in an allergic state. However, medical treatment needs a long time to affect, but surgery can act quickly. Recurrence of AH after medical therapy could occur. **[GMJ.2022;11:e2317]** **DOI:10.31661/gmj.v11i.2317**

Keywords: Allergic; Adenotonsillar Hypertrophy; Medication; Tonsillectomy

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Introduction

Tonsils, adenoids, and pharynx make lymphoid tissue in the ring form at the beginning of the respiratory and digestive tracks. Adenoid hypertrophy (AH) is one of the most common children's diseases referred to the Ear, Nose, and Throat clinic. The antigen stimulation and increased lymphocyte activity have been implicated in causing AH [1].

Because of the tonsils' location at the beginning of the respiratory and digestive tract, they have a protective immunity role against respiratory and digestive pathogens. AH performs immunity protection in this region. Palatine tonsils are immunologically activated by the migration of B and T cells lymphocyte subpopulations [2]. Inflammatory and infectious diseases of the throat, tonsils, and adenoids in children are significant in health system costs [3]. It leads to two common surgery procedures in children (tonsillectomy and adenoidectomy). Recent clinical trial studies show significant effects of AH on sleep apnea, microbial flora of tonsils and adenoids, and craniofacial growth [4]. Also, it has contributed significantly to new surgery techniques and better care to deal with complications after surgery [4, 5]. Regarding the high prevalence of AH, we aimed to compare the results of surgery and medical methods among allergic children with AH.

Materials and Methods

This case-control study was carried out on 68 children aged 4-16 years with AH in an allergic state who were referred to the Pediatric Hospital of Tabriz Medical University from 30th December 2019 to 5th June 2020. Children were chosen based on symptoms and laboratory findings (positive RAST test or Prick test), positive signs of AH in examination by a specialist, and their parents' agreement to participate in the study. They were divided into two groups and matched according to sex, age, and primary clinical signs and symptoms.

The case group consists of 34 children treated by surgery (adenotonsillectomy) at least six months before the study. The control group consists of 34 children who were treated by medical therapy. They were treated with anti-allergic drugs under the direct observation of an immunity and allergy specialist. Finally, they were compared according to the treatment results, including reduction in the tonsils size, recurrence rate, and improvement of symptoms and signs of AH (such as snoring, open mouth breathing, insomnia, and nasal discharge).

This study was approved by the ethical committee of Tabriz University of Medical Sciences (approval code: IR.TBZMED.REC.1389.68).

Statistical Analysis

All the data were analyzed using SPSS for Windows, version 16 (SPSS Inc., Chicago, Ill., USA). Student t-test chi-square were applied for comparisons of variables between two groups. Also, data were provided as mean ± standard deviation and/or number and percentage. A P-value<0.05 was considered significant.

Results

The mean age of the control group was 6.3±2.3 years and included 25 boys (71.9%) and nine girls (29.1%). Also, the mean age of the case group was 6.8±2.1 years and included 24 boys (70.6%) and ten girls (29.3%). Overall, 20 (29.9%) patients had a positive history of smoking in their families. Eczema and urticaria in the control group were observed in 28 (82.4%) patients. However, in the case group, these findings were positive in 22 (64.7%) patients, and there was no significant difference between the two groups regarding the presence of eczema and urticaria. The prick test was positive in all of the patients of both groups, and the RAST test was positive in seven (24.7%) and five (20.6%) patients of the control and case groups, respectively (P>0.05). Improvement in clinical signs and symptoms was observed in most patients of both groups. Clinical

signs and symptoms were not improved in one and two patients of the control and case groups, respectively (P>0.05). In the control group, no decrease in the size of the tonsils occurred in three patients. Recurrence of clinical signs of tonsillar hypertrophy was observed in 6 (17.6%) patients of the control group. There was no recurrence in 28 (82.4%) patients. Medical treatment was continued for 19.6±11.2 months (ranged 4 to 50 months).

Discussion

AH is considered one of the most important causes of pediatric diseases and childhood surgeries. It can cause various signs and symptoms of airway obstruction, such as sleep apnea and rhinosinusitis. Also, AH could result in respiratory and heart diseases [6-8]. According to studies, allergic sensitization is responsible for 36% of AH [9, 10]. Over the past decade, through several epidemiologic studies [11] and empirical studies [12, 13], the association between allergic rhinitis and allergic asthma with AH has been proven [14]. Both have contributed to the increased incidence of disease among children. Respiratory pathogens can cause immunologic responses that result in allergic inflammation in the nose and bronchus. Also, it can cause AH due to allergic reactions and stimulation of granulocytes in the blood, and increased production of special IgE antibodies [15-17]. New research has proved that corticosteroid agents and immune response modulators against allergens can effectively treat patients [18-20]. There is a great concern about the long-term administration of corticosteroid agents because of their side effects [21]. Recent trials demonstrated that intranasal corticosteroids, especially beclometasone and fluticasone, effectively treated patients with AH in an allergic state [22, 23]. In the Gaetano *et al*. study, beclometasone with a dose of 400 mg per day for 24 weeks caused a significant (45%) reduction in the size of tonsils among the children, and it has been suggested that appropriate response was related to their underlying allergic states [24]. Also, the study of Cipradi *et al*. showed that after eight weeks of treatment with fluticasone and isotonic saline, the size of tonsils and the number of surgical cases significantly reduced in the patients with grades 3 and 4 of AH associated with allergy [25]. Based on our study, medical treatment was influential in the allergic cause of AH, and 82.4% of the patients showed appropriate responses to medications. Improvement in clinical signs and symptoms among the children with AH who received medical treatment was not significantly different from the surgical group. These findings are consistent with previous research. In Huang *et al*. study [26], smoking was shown as an essential allergen that could intensify AH, and immunologic tests could be positive in most cases; however, in our research, 29.9% of the patients reported a history of smoking in their families. Our study findings were similar to Korovkina *et al*. results that revealed medical treatment could reduce the signs and symptoms of AH, but recurrence has occurred in three cases [27]. So medical treatment was significantly effective in AH patients in an allergic state. Immunologic tests were positive in most cases, similar to our study [27]. Joshua *et al*. indicated an appropriate response to surgery in 74 to 87% of the patients, and recurrent symptoms were observed in three cases of 206 patients [28]. Griffin *et al*. showed that recurrence and relapse occurred in 7% of patients with AH in an allergic state after one year [29]. Also, Scadding *et al*. revealed that medical treatment has limitations in children, and an interruption in medical treatment can intensify the disease, so surgery was preferred among children [30]. Our findings indicated no difference between medical and surgical treatment in improving clinical signs and symptoms.

In contrast to Griffin *et al*. findings, in our study, no recurrence occurred six months after surgery, and recurrence was observed in only six patients of medical treatment groups. Our study paid attention to the rate of upper respiratory tract infections (URTI) among the patients. The URTI rate was

significantly higher in the group that received medical treatment than in the surgery group. A reduction in URTI among the children who received surgical treatment was observed much sooner than among children under medical treatment (it needs at least four months). Hence, surgical treatment was superior in rapid response to treatment and reduction of the rate of URTI.

Conclusion

Our findings showed no significant differences in the outcomes of the two therapeutic methods for AH in an allergic state. Sex factors and smoking do not affect therapeutic response to treatments (surgical or medical), and the Prick test was more sensitive than the RAST test in the evaluation of allergic states. The treatment method must be chosen based on each patient's situation and cooperation because medical treatment needs a long time and good cooperation of patients.

Conflict of Interest

All authors declare that they had no conflict of interest.

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