

## Original Article

---

# Medical Treatment of Adenotonsillar Hypertrophy- Study of 50 cases

MA Matin<sup>1</sup>, Md. Abul Kalam Azad<sup>2</sup>, Masud Bin Hasan<sup>3</sup>, Muhammad Mahmudul Haque<sup>4</sup>, Tanjhila Akhter<sup>5</sup>

### Abstract:

**Objective:** To examine the efficacy of combined use of intranasal steroids, antibiotics and monteleukast for improving adenotonsillar hypertrophy.

**Materials and Methods:** This prospective study was done at Bangladesh ENT Hospital, Dhaka from January 2020 to June 2021. 50 children were included with primary symptoms of mouth breathing, snoring and sleep disturbances. X-ray soft tissue nasopharynx lateral view was done before and after treatment for comparison. All were prescribed intranasal fluticasone, phenoxymethyl penicillin and monteleukast for 3 months and followed up after completion of 3 months treatment.

**Results:** The age of the children ranged from 2-12 years with mean age 5.4 years. There were 30 female and 20 male with female male ratio 3:2. 30 patients (60%) got complete relief of primary symptoms, 12 patients (24%) got moderate improvement of symptoms and 8 (16%) patients got no benefit of medical treatment and referred for surgery.

**Conclusion:** Intranasal steroid along with oral penicillin and monteleukast are effective reducing size of adenotonsillar hypertrophy, relieving symptoms and reducing the need for surgery.

**Key words:** Adenotonsillar hypertrophy, intranasal steroid, monteleukast.

1. Professor and Head of the Department of ENT & HNS, Shaheed Suhrawardy Medical College, Dhaka 1207
2. Associate Professor and Head of Paediatrics, Satkhira Medical College, Satkhira
3. Oral and Maxillofacial Surgeon, Sir Salimullah Medical College & Mitford Hospital, Dhaka 1100
4. Deputed to BSMMU, DG Health, Dhaka
5. Sir Salimullah Medical College & Mitford Hospital, Dhaka 1100

**Address of Correspondence:** Professor Dr. MA Matin, Head of the Department of ENT & HNS, Shaheed Suhrawardy Medical College, Dhaka 1207, E-mail: [matinfrs@yahoo.com](mailto:matinfrs@yahoo.com), Mobile +8801725897870.

### Introduction:

The adenoids are a pyramid-shaped aggregation of lymphoid tissue in the nasopharynx.<sup>1</sup> The palatine tonsils are composed of lymphoid tissue and are situated in the lateral part of the oropharynx. Both the tonsils and adenoid are components of Waldeyer's ring, the ring of lymphoid tissue in the pharynx required in the production of immunoglobulins and development of both B and T cells.<sup>2,3</sup> Adenotonsillar hypertrophy causes mouth breathing, nasal congestion, hyponasal speech, snoring, obstructive sleep apnoea (OSA), chronic sinusitis and recurrent otitis media.<sup>4</sup> In the long term, OSA can lead to complications including growth failure,

cardiovascular morbidity, neurocognitive abnormalities, learning and behavioural problems, hyperactivity, and poor attention.<sup>5</sup> Topical nasal steroids affect the anatomical component. They decrease inspiratory upper airway resistance at the nasal, adenoidal or tonsillar levels. Corticosteroids may decrease adenotonsillar hypertrophy via their lympholytic or anti-inflammatory effects. Intranasal corticosteroids reduce cellular proliferation and the production of pro-inflammatory cytokines in a tonsil and adenoid mixed-cell culture system.<sup>6</sup> Evidence of a pathophysiologic link between AH and allergy suggests a possible role for intranasal corticosteroids (INS) and antiallergic monteleukast in the management of patients with AH.<sup>4</sup> The role of penicillin for tonsillar hypertrophy is doubtful but can prevent recurrent attack of tonsillitis.

#### Materials and Methods:

This prospective observational study was done at Bangladesh ENT Hospital, Dhaka from January 20 to July 2021 among the children presenting with mouth breathing, snoring at night, sleep apnoea with or without deafness. 50 children were included for this study.

#### Inclusion criteria

1. Children of 2-12 years old with primary nasal symptoms with or without ear symptom
2. Children of adenotonsillar hypertrophy where surgery is contraindicated like bronchial asthma, cardiac problems.

#### Exclusion criteria

1. Adenotonsillar hypertrophy with moderate to severe conductive deafness, gross septal deviation.
2. Parents of children who don't rely upon medical treatment or want surgery.
3. Children who are sensitive to penicillin

Plain X-ray soft tissue nasopharynx lateral view was routinely done for all patients to see the size of adenoid and another X-ray after completion of 3 months treatment to see the improvement (Figure: 1 & 2). PTA and impedance were done if the child got ear symptom/deafness. Medical treatment was given in the form of oral phenoxymethyl penicillin 5ml 2 times daily for 3 months, tablet Monteleukast 4 mg at night and Fluticasone nasal spray 1 puff at each nostril once daily for 3 months in children age upto 5 years and tablet phenoxymethyl penicillin 250 mg BID, tablet Montelukast 5-10 mg at night and nasal spray 2 puffs at each nostril once daily in older age group (6-12 years). Improvement was also assessed by taking history from the parents regarding nasal blockage, mouth breathing, snoring, sleep disturbance, dribbling of saliva and hearing improvement.

#### Results:

Total number of patients in this study population was 50, female 28 and male 22 with female male ratio 3:2 approx. (Table I). Age of the patients ranged from 2-12 years with mean age 5.4 years and 64% of patient's age are between 2-5 years (Table II). Table III shows common symptoms at presentation. All patients (100%) presented with nasal symptoms like nasal blockage, mouth breathing and snoring. 40 patients (80%) presented with dribbling of saliva. 15 patients (30%) presented with sleep apnoea. 12 patients (24%) presented with conductive deafness. Table IV shows follow up of patients after 3 months medical treatment regarding nasal and oral symptoms. 30 patients (60%) got complete relief of nasal symptoms, 12 patients (24%) got 50% (moderate) improvement of nasal symptoms and 8 patients (16%) got no relief of nasal symptoms. Regarding 12 patients presented deafness, 8 patients (66%) got improvement of hearing loss and 4 patients (33%) got no change of hearing loss.

**Table I:**  
*Sex distribution of patients (n=50)*

Sex	No Patients	Percentage
Female	28	56%
Male	22	44%

**Table II:**  
*Age distribution of patients (n=50)*

Age in year	No patients	Percentage
2-5	32	64%
6-9	11	22%
10-12	7	14%

**Table III:**  
*Patient's presenting symptoms, (n=50)*

Symptoms	Number of patients	Percentage
Nasal blockage, Snoring, mouth breathing	50	100%
Sleep apnoea	15	30%
Dribbling of saliva	40	80%
Deafness	12	24%

**Table IV:**  
*Follow up of patients after 3 months of medical treatment (n==50)*

	Number of patients	Percentage
Complete relief of nasal symptoms includingsleep apnoea	30	60%
Moderate improvement of nasal symptoms	12	24%
No improvement of nasal symptoms	8	16%
Improvement of deafness out of 12 patients	8	66%
No improvement of deafness out of 12 patients	4	33%



**Fig.-1:** Adenoidal hypertrophy before treatment.



**Fig.--2:** Adenoid size reduced after treatment.

**Discussion:**

The size of the tonsil varies with age, hereditary qualities and pathological status. At the fifth or sixth year of life, the tonsils quickly increase in size, achieving their most extreme size at puberty. At pubescence, the tonsils measure 20–25 mm in vertical distance across and 10–15 mm in transverse diameter.<sup>7</sup> In all children, the adenoid volume increases with age, up to age five or six years, and afterward diminishes step-by-step by age eight or nine years.<sup>8</sup>

Adenoidal hypertrophy can be associated with sleep disorders ranging from snoring to OSA, which may produce both evening and daytime sequelae (i.e. discontinuous sleep, sleepwalking, morning headache, trouble concentrating, drowsiness and enuresis).<sup>9,10</sup>

Topical nasal steroids affect the anatomical component. They decrease inspiratory upper airway resistance at the nasal, adenoidal or tonsillar levels.<sup>6</sup> Fluticasone and Nasonex® seem to have less bioavailability than older nasal steroids (e.g. beclomethasone).<sup>11</sup> Mometasone furoate nasal spray has lower bioavailability. It has a broad first-pass metabolism and a moderately higher binding affinity for the glucocorticoid receptor compared with the other intranasal corticosteroids. It does not suppress the hypothalamic–pituitary–adrenal axis when administered at doses of 100–200 mcg/day, which was clinically relevant.<sup>12</sup> One study done by Modrzyński *et al.* showed three months of treatment with intranasal corticosteroids and antihistamine significantly reduced adenoidal hypertrophy (measured by endoscopy and acoustic rhinometry) and obstructive airway symptoms.<sup>13</sup>

In a study by Jazi *et al.*, 39 adenoidal hypertrophy patients were randomised to receive fluticasone or azithromycin for 6 weeks. Tonsillar size, adenotonsillar

hypertrophy level and OSA symptoms (sleep apnoea, hyponasal speech, snoring and mouth breathing) were assessed, via a self-administered questionnaire, before treatment, and at one week and eight weeks after treatment. Mouth breathing, snoring, hyponasal speech and sleep apnoea improved significantly in both groups ( $p < 0.05$ ). In both groups, the grade of obstruction was also significantly reduced.<sup>14</sup> In our study we use topical intranasal steroid, oral penicillin and antihistamine and reported that about 60% of our patient got complete relief of nasal symptoms after three months treatment.

Although medical treatment is one of the option but many of the adenotonsillar hypertrophy patients need surgical option that is adenotonsillectomy. The most common reasons for adenotonsillectomy in the paediatric population include history of recurrent tonsil infection, including peritonsillar abscess, and tonsil hypertrophy with associated sleep disordered breathing (SDB) and obstructive sleep apnea (OSA).<sup>15</sup>

Adenotonsillectomy operation is not without risk. Lane *et al.* evaluated 1780 patients who underwent tonsillectomy or adenotonsillectomy. Twenty-one of the patients (1.2 per cent) had a primary bleed and 69 (3.9 per cent) had a secondary bleed.<sup>14</sup> An estimated 2–3 per cent of patients experience haemorrhage and 1 in 40000 patients die from tonsillectomy-related bleeding.<sup>16,17</sup> On the other hand topical corticosteroids are associated with fewer and milder adverse effects than oral corticosteroids. The local side effects of intranasal steroid therapy—primarily dry nose, crusting, bleeding and candidiasis—have been well described in the literature.<sup>18</sup> In this study not a single patient got this type of side effects of topical nasal steroid.

**Conclusion:**

As Adenotonsillectomy is not without risks so non-surgical treatment methods have been considered for use in appropriate patients. Intranasal corticosteroids, used with antibiotics and antihistamines might reduce cellular proliferation and pro-inflammatory cytokine production in atonsil and adenoid mixed-cell culture system. They may reduce tonsillar, adenoidal or adenotonsillar hypertrophy, decreasing rates of surgery for adenotonsillar hypertrophy.

**References:**

1. Bhargava R, Chakravarti A. A double-blind randomized placebo-controlled trial of topical intranasal mometasonefuroate nasal spray in children of adenoidal hypertrophy with otitis media with effusion. *Am J Otolaryngol* 2014;35:766–70.
2. Kenna MA, Amin A. Anatomy and physiology of the oral cavity. In: Snow JB, Wackym PA, eds. *Ballenger's Otorhinolaryngology Head and Neck Surgery*, 17<sup>th</sup> edn. Shelton, CT: BC Decker, 2009;769–74
3. Çelebi S, Çelik Ö, Karaca ÇT, Ulusoy S. Multiparametric comparison of thermal welding versus cold knife tonsillectomy with tonsil size. *J Med Updates* 2013;3:13–18
4. Sakarya EU, Bayar Muluk N, Sakalar EG, Senturk M, Aricigil M, Bafaqeeh SA, Cingi C. Sakarya EU, et al. *J Laryngol Otol*. 2017 May;131(5):384-390.
5. Scadding G. Non-surgical treatment of adenoidal hypertrophy: the role of treating IgE-mediated inflammation. *Pediatr Allergy Immunol* 2010;21:1095–106
6. Brouillette RT, Manoukian JJ, Ducharme FM, Oudjhane K, Earle LG, Ladan S et al. Efficacy of fluticasone nasal spray for pediatric obstructive sleep apnea. *J Pediatr* 2001;138:838–44
7. Standring S. Pharynx. In: Standring S, ed. *Gray's Anatomy: The Anatomical Basis of Clinical Practice*, 39th edn. Philadelphia: Elsevier/Churchill Livingstone, 2005;619–31
8. Hellings PW, Fokkens WJ. Allergic rhinitis and its impact on otorhinolaryngology. *Allergy* 2006;61: 656–64
9. Berlucchi M, Salsi D, Valetti L, Parrinello G, Nicolai P. The role of mometasonefuroate aqueous nasal spray in the treatment of adenoidal hypertrophy in the pediatric age group: preliminary results of a prospective, randomized study. *Pediatrics* 2007; 119:e1392–7
10. Kveton JF, Pillsbury HC 3rd, Sasaki CT. Nasal obstruction: adenoiditis vs adenoid hypertrophy. *Arch Otolaryngol* 1982;108:315–18
11. Brouillette RT, Manoukian JJ, Ducharme FM, Oudjhane K, Earle LG, Ladan S et al. Efficacy of fluticasone nasal spray for pediatric obstructive sleep apnea. *J Pediatr* 2001;138:838–44
12. Zitt M, Kosoglou T, Hubbell J. Mometasonefuroate nasal spray: a review of safety and systemic effects. *Drug Saf* 2007;30: 317–26
13. Modrzyński M, Zawisza E, Mazurek H. The influence of medical treatment of the perennial allergic rhinitis on the adenoid size in children [in Polish]. *Otolaryngol Pol* 2006;60: 543–50
14. Jazi SM, Barati B, Kheradmand A. Treatment of adenotonsillar hypertrophy: a prospective randomized trial comparing azithromycin vs. fluticasone. *J Res Med Sci* 2011;16:1590–7

15. Lane JC, Dworkin-Valenti J, Chiodo L, Hauptert M. Postoperative tonsillectomy bleeding complications in children: a comparison of three surgical techniques. *Int J Pediatr Otorhinolaryngol* 2016; 88:184–8
16. Rakover Y, Almog R, Rosen G. The risk of postoperative haemorrhage in tonsillectomy as an outpatient procedure in children. *Int J Pediatr Otorhinolaryngol* 1997;41:29–36
17. Randall DA, Hoffer ME. Complications of tonsillectomy and adenoidectomy. *Otolaryngol Head Neck Surg* 1998; 118:61–8
18. Mabry RL. Corticosteroids in the management of upper respiratory allergy: the emerging role of steroid nasal sprays. *Otolaryngol Head Neck Surg* 1992;107:855–60.