



MOMETASONE FUROATE AND OXYMETAZOLINE NASAL SPRAY AS A TREATMENT MODALITY IN NASAL OBSTRUCTION DUE TO ADENOID HYPERTROPHY IN CHILDREN

¹Avishek Dhiman ²Subhash Chander

¹Dr Avishek Dhiman

MS ENT, Civil hospital, Jwalamukhi, Kangra Himachal Pradesh

²Dr Subhash Chander, MD

Pediatrician, Civil hospital, Jwalamukhi, Kangra Himachal Pradesh

Corresponding author

²Dr Subhash Chander

ABSTRACT

Aim: A common cause of nasal obstruction in children is adenoid hypertrophy. It is an indication for surgical management of nasal obstruction along with deviated nasal septum and antro choanal polyp in children due to effect on growth of children due to these conditions. If the symptoms are severe due to adenoid hypertrophy usually adenoidectomy is recommended in most of cases, however cleft palate, bleeding disorders and anaemia being contraindications of surgery, parents also get frightened when they are advised about surgery, we in our study tried to see effectiveness of nasal steroid spray and Oxymetazoline combination in adenoid hypertrophy. The safety of use of nasal steroid spray for longer duration has been studied and proved by various studies. The aim of the current study is to determine the effectiveness of mometasone nasal spray with Oxymetazoline nasal spray in treatment of children with adenoid hypertrophy presenting as nasal obstruction and mouth breathing.

Methods: This prospective study was conducted in the department of Health and family welfare Civil Hospital Jwalamukhi Himachal Pradesh by combined efforts of ENT and Paediatrics doctors on 25 children who met the inclusion criteria over a period of 9 months. They were diagnosed on the basis of history taken from parents, examination done by physician and X-ray nasopharynx. Before starting of treatment a pre-treatment scoring was accessed. All children were given mometasone furoate nasal spray (for 3 months) and Oxymetazoline nasal drops (for 14 days) therapy and then children were evaluated every monthly for next 3 months and scoring on the basis of symptoms was done on every visit. X ray nasopharynx were repeated after three months of treatment.

Results: During the 3 months follow up after starting the treatment, a significant improvement in symptom of nasal obstruction was seen in 64% patients and 60% patients showed improvement in snoring after one month treatment, which

increased to 85.6% and 83% respectively after completion of 3 months treatment. X ray nasopharynx taken after 3 months of treatment showed reduction in grading of adenoids in 82% of total patients. 2 patients did not showed good improvement after treatment and they were referred to higher centre for adenoidectomy. Although longer follow up is required for exact results but our study established that a long term Mometasone Furoate nasal spray use could be an alternative to adenoidectomy in children whose parents are not willing for surgery or the children who have contraindication for surgery.

Conclusions: In patients where adenoidectomy is contraindicated and parents who are not willing for surgery, long term mometasone furoate nasal spray with short term Oxymetazoline nasal drops treatment has good outcome as a treatment option for nasal obstruction due to adenoid hypertrophy.

Keywords: Adenoid hypertrophy, Adenoidectomy, Mometasone furoate nasal spray, Nasal obstruction, Oxymetazoline nasal spray

INTRODUCTION

The common cause for nasal obstruction and snoring in children is adenoid hypertrophy.¹ Other causes include deviated nasal septum, antrochoanal polyp etc. Adenoid hypertrophy is a common indication for surgery in such patients in the form of adenoidectomy. Adenoids are small sized at the time of birth and then they start growing in size after immunologic development in the children from age of 1 to 2 years and then keep on growing till the age of 7 to 9 years in most of the cases and then again regress in size.² Adenoids due to their location in nasopharynx are usually exposed to multiple antigens entering body with every breath so they start to produce antibody against these antigens and play a role in immunity of body. This explains their increase in size after exposure to antigen mainly seen in patients who are allergic to some antigens.² In patients with severe symptoms of nasal obstruction adenoidectomy as a surgery is usually recommended, however it is well known that there are limitations for surgery like cleft palate, bleeding disorders, low hemoglobin, concomitant infections in throat.⁶ It has been seen that allergy and infection are a known stimulant for adenoid enlargement, so the medical management of this condition is mainly directed towards treating allergies and infections. The exact contribution of oral steroid in nasal symptoms due to adenoid hypertrophy is not well established because use of systemic steroid may produce temporary effect on the size of adenoids but its long term use has been associated with significant adverse effects in the children. Whereas the safety of use of intranasal steroid has been well reported and documented in various studies.⁸⁻¹⁰ No significant adverse effects has been seen on adrenal and cortical function in children among age group of 6-12 years with allergic rhinitis and nasal obstruction.⁸ Intranasal use of 200 mcg mometasone furoate aqueous nasal spray once daily for 3 months was proved to be safe and very well tolerated among children of age 3-12 years.⁹ The aim of our study was to access the effects of Mometasone Furoate nasal spray + Oxymetazoline nasal spray in treatment of adenoid hypertrophy and to use it as an alternative to adenoidectomy in children whose parents are not willing for surgery.

MATERIAL AND METHODS

This study was conducted in department of health and family welfare Himachal Pradesh at civil hospital jwalamukhi for a period of nine months between august 2019 to April 2020. 25 children aged between 3-11 years who came to ENT and Pediatrics department in civil hospital jwalamukhi presenting with symptoms of nasal obstruction and snoring with high arched palate after confirmation via full examination to have adenoid hypertrophy were included. A prospective study was done after consent from parents of children. Children who fit the inclusion criteria were included and who fit in exclusion criteria were not included. Initial assessment of all children was done by taking a detailed history from parents about their symptoms and physical examination was done to look for signs of adenoid hypertrophy and to exclude other causes of nasal obstruction. A pretreatment and follow up symptom scores at visit every monthly visit was assessed. Diagnostic nasal endoscopy done on pretreatment and follow up visits and adenoid hypertrophy grading was determined (Figure 1). Final readings were analysed to determine the efficacy of mometasone nasal spray as an alternative to surgery.

Inclusion criteria

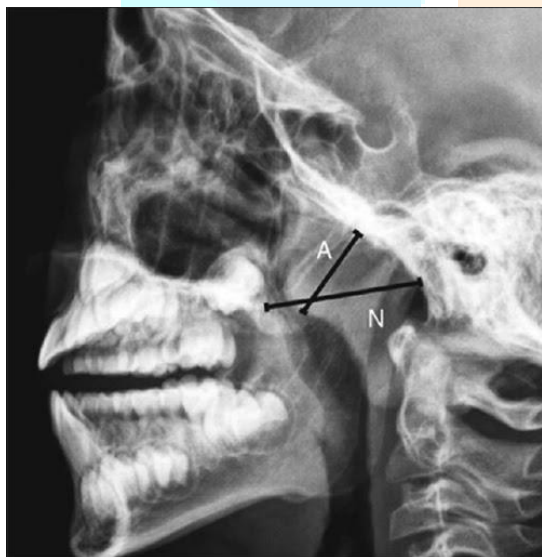
Inclusion criteria included history of nasal obstruction and snoring for more than 6 months, adenoid hypertrophy which was confirmed on X-ray findings (Figure 1), voluntarily not willing for surgery, without Complications of adenoid hypertrophy such as otitis media with effusion, no contraindications to use nasal spray steroids.



Fig.1 X- ray nasopharynx with adenoid hypertrophy

Exclusion criteria

Those children with history of any use of systemic corticosteroids within 4 weeks prior to study, any history of earlier tonsil or adenoid surgery, nasal disease (e.g. nasal septum deviations, hypertrophy of



Inferior turbinate and nasal polyposis), history of epistaxis.

X ray in fig 2. showing grading of adenoids

Grading of adenoids was done on the basis of x ray nasopharynx using clemens and mcmurray grading system which is as:

Grade 1 adenoid filling one third of vertical height of choana.

Grade 2 upto two third.

Grade 3 more than two third bt not filling whole.

Grade 4 filling whole of the choana.

Fig.2 X-ray Show grading of adenoids

RESULTS

Out of 25 patients included in study 16(64%) were male children and 9(36%) were female children. Mean age of the patients in study was 7.8 years with standard deviation of 2.8 years.

Out of 25 patients 16 (64%) patients reported improvement in symptoms of nasal obstruction at first month follow up. 15 patients (60%) reported improvement in symptom of snoring as history given by parents at first visit after one month. This increased to 22 patients (88%) and 21 patients (84%) respectively after completion of 3 months treatment.

Out of 25 patients 23 patients showed good improvement with three months treatment whereas 2 patients did not showed good improvement and they were referred to higher centre for adenoidectomy.

On X ray nasopharynx it was seen that 20 patients out of 25 showed improvement in grading of adenoid hypertrophy when compared with base line x rays before starting of treatment.

DISCUSSION

Adenoid hypertrophy is the most common condition in pediatric age group which usually presents as a case of bilateral nasal obstruction to ENT specialist, which may or may not be associated with snoring. Mouth breathing is also a chief complaint associated with adenoid hyperplasia. The treatment earlier thought for adenoid hypertrophy in most of children was adenoidectomy but due to significant risks and complications which can occur with the surgery are well established. Paulussen et al said that the surgical removal of adenoid with adenoidectomy may have an impact on the systemic immunologic system of the children in the form of low immunity.¹⁰ Demain and Goetz described in his study the use of intranasal steroid for successful treatment of adenoid hypertrophy in 1995.¹¹ Other authors have also had same results with multiple and different intranasal steroid spray preparations when used for adenoid hypertrophy. The mechanism of action is thought to be by a direct reduction in adenoid size by the lympholytic action caused by nasal steroid preparations and reduction in inflammation by the anti-inflammatory effects of steroids.¹¹ Intranasal steroid preparations have been proved to be safe and effective in pediatric age group with no systemic side effects as seen with systemic steroid preparations. A study which was conducted by Gupta et al regarding snoring caused due to adenoid hypertrophy also proved that a significant improvement is seen in all indicators of obstructive sleep apnea.¹² These findings are in order with our study which also proves the same. Other study which was done by Rezende et al. in which they showed that Mometasone nasal spray had an improvement in nasal obstruction symptoms when compared to saline nasal spray in adenoid hypertrophy. Also seen was a significant decrease in adenoid occupied area when compared to saline nasal douching which almost had no effect.¹³ All these findings in different studies are similar to our study which showed a decrease in symptoms and decrease in the size of adenoids when using Mometasone and Oxymetazoline nasal spray in patients with adenoid hypertrophy.

CONCLUSION

Long term use of topical intranasal mometasone furoate nasal spray with short course of Oxymetazoline nasal spray can be a good therapeutic option in patients with adenoid hypertrophy and nasal obstruction without the use of surgery. Our study proves an effective and safe alternative to surgical management in children with adenoid hypertrophy. Intranasal corticosteroids treatment is well tolerated in most of the children. In our study no adverse effects were observed after a total dose of 100 micrograms /day was used for 120 days daily once, followed by maintenance therapy. Hence long term use of mometasone nasal spray with short course of Oxymetazoline nasal spray can be an effective alternative for patients are not willing to undergo surgical intervention.

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REFERENCES

1. Rutkow IM. Ear, nose, and throat operations in the United States, 1979 to 1984. *Arch Otolaryngol- Head Neck Surg.* 1986;112(8):873-6.
2. Scadding G. Non-surgical treatment of adenoidal hypertrophy, The role of treating IgE mediated inflammation. *Pediatric Allergy Immunol.* 2010;21(8):1095-106.
3. Grundfast KM, Wittich DJ Jr. Adenotonsillar hypertrophy and upper airway obstruction in evolutionary perspective. *The Laryngoscope.* 1982;92(6):650-6.
4. Potsic WP, Wetmore RF. Sleep disorders and airway obstruction in children. *Otolaryngologic Clin North Am.* 1990;23(4):651-63.
5. Gates GA, Muntz HR, Gaylis B. Adenoidectomy and otitis media. *Ann Otol Rhinol Laryngol.* 1992;155:24-32.
6. Stuck BA, Windfuhr JP, Genzwurker H, Schroten H, Tenenbaum T, Gotte K. Tonsillectomy in Children. *Deutsches Arzteblatt Int.* 2008;105(49):852-61.
7. Berlucchi M, Valetti L, Parrinello G, Nicolai P. Long-term follow-up of children undergoing topical intranasal steroid therapy for adenoidal hypertrophy. *Int J Pediatric Otorhinolaryngol.* 2008;72(8):1171-5.
8. Nayak AS, Ellis MM, Gross GN, Mendelson LM, Sohenkel EJ, Lanier BQ, Simpson B, Mullin ME, Smith JA. The effects of triamcinolone acetamide aqueous nasal spray on the adrenocortical function in children with allergic rhinitis. *J Allergy Clin Immunol.* 1988;101:157- 62.
9. Brannan MD, Herron JM, Afrime MB. Safety and tolerability of once daily mometasone furoate aqueous nasal spray in children. *Clin Therap.* 1997;19(6):1330 -7.
10. Paulussen C, Claes J, Claes G, Jorissen M. Adenoids and tonsils, indications for surgery and immunological consequences of surgery. *Acta Otorhinolaryngol Belg.* 2000;54:403-8.
11. Demain JG, Goetz DW. Pediatric adenoidal hypertrophy and nasal airway obstruction: reduction with aqueous nasal beclomethasone. *Pediatrics.* 1995;95:355-64.
12. Gupta V, Gupta M, Matreja PS, Singh S. Efficacy of mometasone nasal spray in children with snoring due to Adenoids. *Clin Rhino An Int J.* 2014;7(1):1- 4.
13. Rezende RM, Silveira F, Barbosa AP, Menezes UP, Ferriani VP, Rezende PH, et al. Objective reduction in adenoid tissue after mometasone furoate treatment. *Int J Pediatr Otorhinolaryngol.* 2012;76(6):829-31.