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REVIEW ARTICLE

ROLE OF INTRANASAL STEROID IN THE PREVENTION OF RECURRENT NASAL SYMPTOMS AFTER ADENOIDECTOMY

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ABSTRACT

Objective: To demonstrate the role of intranasal steroid in the prevention of adenoid regrowth after adenoidectomy. **Methods:** Prospective randomized controlled study. One hundred children after adenoidectomy were divided into 2 groups. Group I received postoperative intranasal steroid and group II received postoperative intranasal saline spray. Both medications were administered for 12 weeks postoperatively. Patients were followed up for 6 months. **Results:** Significant difference between both groups after 6 weeks and after 6 months.The intranasal steroid group had significantly lower score after 6 months as regards nasal obstruction, nasal discharge, and snoring than the intranasal saline group. As regards lateral radiographs, there was statistically significant difference between both groups 6 months postoperatively. **Conclusion:** Factors influencing the outcome of intranasal steroids therapy in the prevention of adenoid regrowth have not been identified. However, this treatment may obtain successful results in children to avoid readenoidectomy.

INTRODUCTION

Nasal obstruction is one of the main symptoms of adenoid hypertrophy; they are also presented with chronic rhinorrhea, snoring, hyponasal speech, and obstructive sleep disorder (Lesinskas and Drigotas, 2009). Adenoidectomy can reduce both nasal obstructions and upper respiratory infections. However, some patients display clinically significantly persistent nasal symptoms even after surgery. Symptoms, such as nasal obstruction or recurrent upper respiratory infections, persist in 19–26% of patients (Joshua *et al*., 2006). Adenoidectomy remains a commonly performed procedure, although it produces short-term benefits (3 Vandenberg and Heatley, 1997). There are 2 difficulties that have been described to prevent complete adenoidal removal. Firstly, lymphoid tissue in the pharyngeal recess is considered by all authors as difficult to remove (Buchinsky *et al*., 2000). The second difficulty is the bulging adenoidal tissue into the posterior choanae, which was addressed by Pearl and Manoukian (Pearl and Manoukian, 1994); they found choanal adenoids in 9% of their study group. Although there are few nonsurgical alternative treatment options, these may be considered in less serious cases. Accordingly, studies about intranasal steroid applications under various protocols have been presented in the literature, but none of these studies addressed the efficacy of intranasal steroids to prevent recurrence of adenoid after adenoidectomy.

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Patients and Methods: This study was a prospective randomized controlled parallel clinical study. The study was approved by the department of Otorhinolaryngology, Sarvodaya Hospital, Faridabad. Children presented to ENT outpatient clinic at Sarvodaya hospital during the period from September 2015 to May 2017, diagnosed as adenoid hypertrophy. The study included 2 groups; each included 50 children. Written informed consents from the parents were taken about the participation of their children in the study. The diagnosis was based on the following symptoms: nasal obstruction, nasal discharge, and/or snoring and lateral radiographs (enlarged convex bulge in the roof of the nasopharynx compressing the nasopharyngeal airway). Exclusion criteria included the use of intranasal or systemic steroids within the last 1 year, use of any intranasal medication within the previous 2 weeks of entering the study, acute URTI within 2 weeks of entering the study, history of epistaxis, immunodeficiency disorders, or hypersensitivity to the mometasone furoate. Assessment of each child upon entering the study included the following: history and physical examination, parental questionnaire, and lateral nasopharyngeal radiograph. Adenoidectomy was done using the classical method using the adenoid curette. After adenoidectomy, children were then simply randomized into 2 groups, group I which included (50 children) with postoperative intranasal steroids and group II (50 children) who had postoperative intranasal saline spray. Patients in group I received 12-week course of single intranasal spray administration in each nostril with mometasone furoate (40 mcg/day). After this course, all patients in group I were

reassessed to evaluate the efficacy of treatment. All patients or parents were asked to report the degree of the symptom after 2 weeks, 6 weeks, and 6 months postoperatively with the questionnaire that is fulfilled by the parents. No other medication was allowed during the treatment. Patients who used systemic steroids for any other reason were excluded from the study. Patients in group II received intranasal saline nasal spray for the same period (12 weeks), and assessment was done in the same way as group I. All patients were followed up after adenoidectomy after 2 weeks, 6 weeks and 6 months. Lateral radiographs were done after 6 months in the postoperative period.

RESULTS

In group I patients with intranasal steroids, there were 46 patients (4 patients were excluded from the study) with age range from 3 to 13 years (mean age = 7.42 years), and there were 54 males (56.3%) and 42 females (43.8%), while in group II with intranasal saline included 42 patients (8 patients were excluded) with age range from 3 to 13 years (mean age = 5.89 years); this group included 42 males (45.7%) and 50 females (54.3%). As regard nasal obstruction, highly significant difference towards group I with intranasal steroids, when compared with group II with intranasal saline 6 weeks (P = 001) and 6 months (P = .031) postoperatively. Regarding nasal discharge, there was a highly significant difference (P = .0001) between both groups, towards group I with intranasal steroids after 6 months (P = .001), in the postoperative period. While after 2 weeks in the postoperative period, there was no significant difference (P = 1.00) between both groups. Regarding snoring, there was a highly significant difference between both groups after 6 months. There was no significant difference after 2 weeks (P = .363) in the postoperative period. Significant difference (P = .003) was noted towards group I patients regarding nasopharyngeal radiograph after 6 months in the postoperative period. In the current study, it was found that the overall satisfaction among parents of group I patients was 85.4%. Overall satisfaction among parents of group II was 76.1%.

DISCUSSION

Revision adenoidectomies are not unheard of. However, a review of the literature, including some prominent textbooks, does not illuminate the issue or its frequency (Buchinsky *et al*., 2000). Buchinsky and coworkers (Buchinsky *et al*., 2000) failed to find a new obstructing adenoid pad after adenoidectomy in a large series of children, while, on the contrary, Joshua and his colleagues in (Joshua *et al*., 2006) found a new obstructing adenoid tissue in the clinical practice. They reported infrequent occurrence of adenoid re-growth after adenoidectomy that causes nasal obstruction which accounts for 3% of patients with persistent postadenoidectomy symptoms. Successful use of intranasal steroid treatment in children with adenoid hypertrophy was introduced by Demain and Goetz (Demain and Goetz, 1995). Although it is not yet clear by which mechanisms the steroids reduce the nasal airway obstruction, however, there are some theories such as the anti-inflammatory effect of steroids that help to reduce adenoidal and nasopharyngeal inflammation (Demain and Goetz, 1995). The present study showed that the use of intra nasal steroids after adenoidectomy was beneficial to relieve nasal obstruction and prevent recurrence of adenoid after adenoidectomy after a follow-up period of 6 months. Steroids are generally well tolerated in children. Nonsurgical alternatives for adenoid hypertrophy are limited to treatment of the coexisting upper airway infections. However, it was reported that treatment with intranasal steroids can decrease the size of adenoid hypertrophy, using beclomethasone (Demain and Goetz, 1995), fluticasone (Brouillette *et al*., 2001), and mometasone (Cengel and Akyol, 2006). Among several commercially available steroid nasal sprays, we selected mometasone furoate for this study. This drug had been reported previously not to cause any adverse effects on growth and hypothalamic pituitary adrenal axis. Also, the systemic availability of the drug after topical administration is lower than that ofCiprandi and coworkers in (Ciprandi *et al*., 2007) found that the use of intranasal flunisolide was associated with a significant reduction of adenoid hypertrophy in 72.6 % of the children. On the contrary, isotonic saline solution was associated with a nonsignificant improvement of adenoid hypertrophy as reported in 30.7% of children. The current study also clarified similar results as Ciprandi and his colleagues (Ciprandi *et al*., 2007), as there was significant reduction in the size of the adenoid in lateral radiographs after 1 year with a P value = 003. In this study, it was found that the overall satisfaction among parents of group I patients was 85.4%. Similar results were reported by Lesinskas and Drigotas (Lesinskas and Drigotas, 2009); they showed that 82.7% of the parents were satisfied with the results of adenoidectomy. One of the limitations is the noncompliance of the children to the intranasal steroids which is observed mainly in the young children.

Conclusion

Factors influencing the outcome of intranasal steroids therapy have not been identified. However, this treatment may obtain successful results in children to avoid surgery for adenoid recurrence. The most appropriate drug, the most efficient dose, and optimal treatment duration need to be investigated and determined.

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