

Significance Of Oral Hygiene in Bronchial Asthma Patients in A Tertiary Care Centre

Dr.Shankar Ganesh S¹, Abinesh Raam², Dr.K.Deepak Raj³

Department of Otorhinolaryngology, Saveetha medical college and hospital, Saveetha Nagar, Thandalam ,Chennai-602105.

¹post Graduate, Department Of Otorhinolaryngology, Saveetha Medical College, Hospital,Kancheepuram

²third Year Mbbs, Saveetha Medical College Hospital ,Kancheepuram

³senior Resident, Department Of Otorhinolaryngology, Saveetha Medical College Hospital,Kancheepuram

Source(s) of support: Nil, Presentation at a meeting: Nil, Conflicting Interest (If present ,give more details): Nil

Acknowledge: Nil

Author contributions:

All authors contributed to the study's conception and design. Material preparation, data collection and analysis were performed by the first author.

ABSTRACT :

Objectives: To investigate the incidence of oropharyngeal candidiasis in bronchial asthma patients using inhalational corticosteroid therapy. To assess the awareness on the importance of oral hygiene in such patients.

Method: 100 Bronchial asthma patients using inhalational corticosteroid therapy are randomly sampled from a tertiary care centre in Chennai. The incidence of oropharyngeal candidiasis in bronchial asthma patients using inhalational corticosteroid therapy was noted. A questionnaire based study was conducted and their awareness on the importance of oral hygiene was assessed.

Result: 95% of the study population were aware of the importance of good oral hygiene and were maintaining it. The incidence of oropharyngeal candidiasis in the study population was found to be 5%.

Conclusion: Statistical significance has been proven, yet future studies has to be done with a larger study population to know it's practical correlations.

KEY WORDS :

- Brochial asthma
- Inhalational corticosteroids
- Oropharyngeal candidiasis
- Oral hygiene

INTRODUCTION:

Inhaled corticosteroids are helpful in controlling the signs and symptoms of asthma and thus helps in reducing oral corticosteroid dependency in chronic asthma patients (1-7). Larger doses of steroids are required for certain patients to achieve optimal control of their disease. There is an increased incidence of oropharyngeal complications with increasing doses of beclomethasone dipropionate(8,9). Most of the aerosol delivered by the inhaled corticosteroids are deposited in the oral cavity and oropharynx which results in increased incidence of oropharyngeal candidiasis(10). The tube, cone and pear spacer along with the Aerochamber have significantly reduced the deposition of inhaled aerosols in the oropharynx and thus reducing the incidence of oropharyngeal candidiasis (11-13).

Patients with poor hand lung coordination can be helped by the addition of a spacer device to the Metered dose inhaler(14,15) . Addition of this spacer device increases the effectiveness of inhaled steroids in those patients. Inefficient intrapulmonary delivery of the steroids may occur due to poor inhaler technique. Oropharyngeal complications because of the deposition of a larger proportion of the drug in the oropharynx may limit the effectiveness of inhaled corticosteroids delivered by MDI.

Toogood et al.(16) in his study showed that there is reduction in the incidence of oropharyngeal candidiasis by the addition of a spacer device to the metered dose inhalers.

In this study ,the incidence of oropharyngeal candidiasis in bronchial asthma patients using inhalational corticosteroid therapy is assessed. The awareness of oral hygiene in such patients has also been assessed.

METHODOLOGY:

A Prospective study was done on a group of 100 bronchial asthma patients under inhalation corticosteroid therapy in a tertiary care centre in Chennai after obtaining ethical clearance from the institutional committee. A pre-validated, structured, self administered questionnaire is prepared. All the patients were using metered dose inhalers for atleast a time period of 6 months. Incidence of oropharyngeal candidiasis was noted in the patients under inhalation corticosteroid therapy which was diagnosed by clinical examination and confirmed using fungal culture. The fungal culture method involved dry swabbing of the tonsillar pillar and posterior pharynx. The collected specimen was inoculated on a Sabouraud's medium.

Statistical analysis was done using the fishers exact test in attempt to demonstrate an association between an abnormal throat examination or the presence of upper respiratory tract symptoms and the existence of positive throat swab culture for

candidiasis. Using the formula $4pq/d$ the sample size was calculated to 50, with 10% non responsive rate the sample size was increased to 100. Universal sampling is adapted.

Inclusion criteria:

-Bronchial asthma patients using inhalation corticosteroid therapy.

Exclusion criteria:

- Patients with steroids in any other routes of administration.
- Immunocompromised patients.
- Patients with previous history of oropharyngeal candidiasis.

Candida infection was defined as a positive oropharyngeal culture for *C. albicans* along with clinical findings like whitish patches in the oropharynx and/or symptoms of infection. Candida colonization was defined as a positive culture for *C. albicans* without clinical findings.

RESULTS:

The present study consisted of 100 bronchial asthma patients using corticosteroid therapy of which 60 were male and 40 were females. Among the 100 participants, 58 were aware that inhalational corticosteroid therapy predisposes to oral candidiasis whereas 42 were not. (Figure 1)

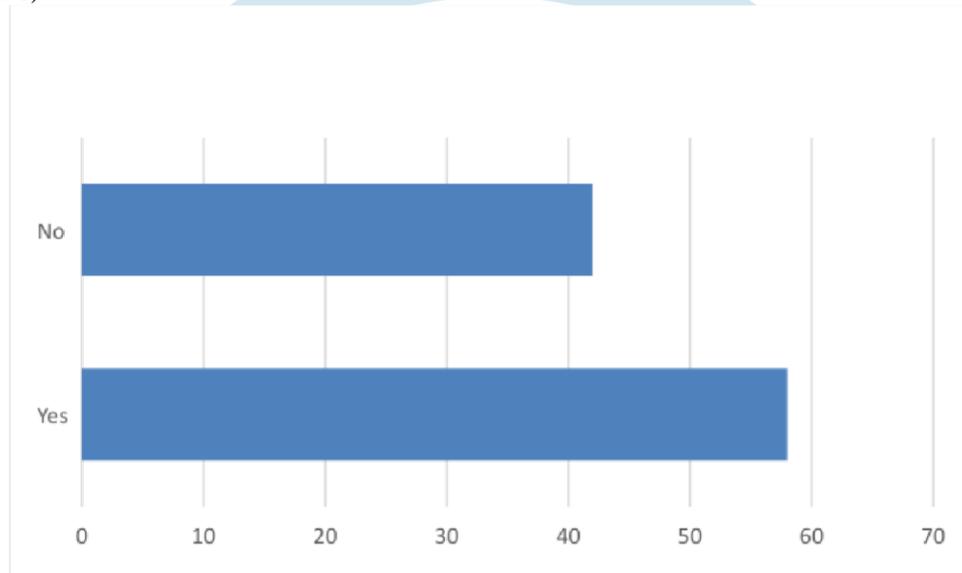


Figure 1: Awareness about inhalational corticosteroid predisposing to oral candidiasis

Of the study participants, 47 knew that good oral hygiene practice could reduce the risk of developing oral candidiasis whereas 53 were not aware of it. (Figure 2)

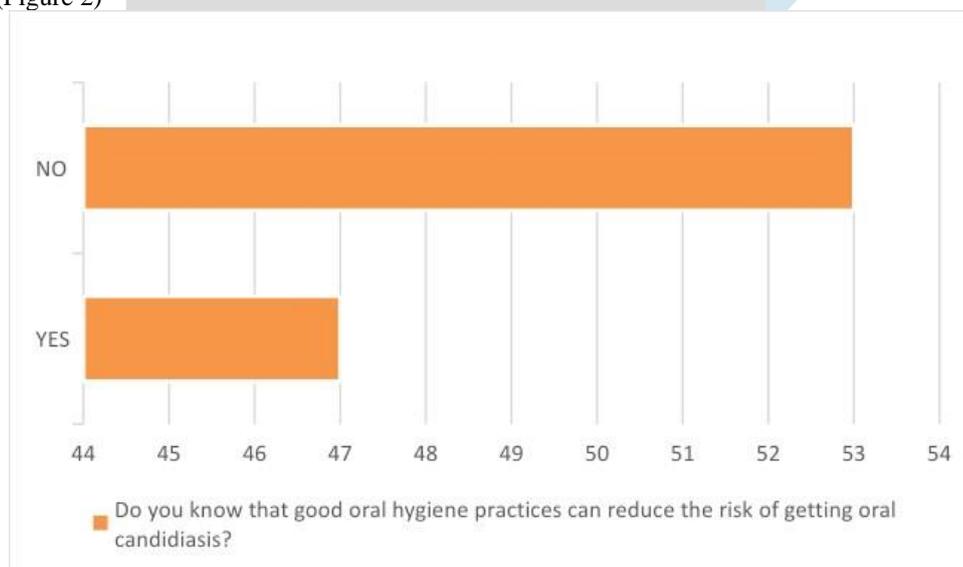


Figure 2: Awareness about good hygiene practice to reduce risk of oral candidiasis

The incidence of oropharyngeal candidiasis (white flurry coat in the tongue) in the study population was found to be 4%. (Figure 3)

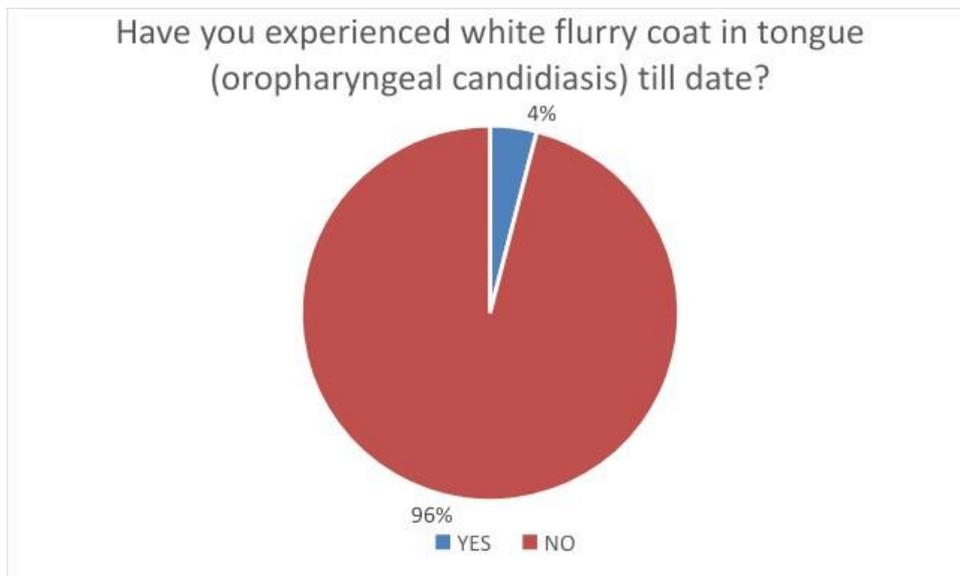


Figure 3: Incidence of oropharyngeal candidiasis

.87% of the participants experienced complications while using oral corticosteroid therapy such as dryness of mouth, voice change, throat pain and taste alteration (Figure 4). Among these complications dryness of mouth (87%) was experienced by majority of the participants followed by throat pain (47%), voice change (39%) and taste alteration (8%). (Figure 5)

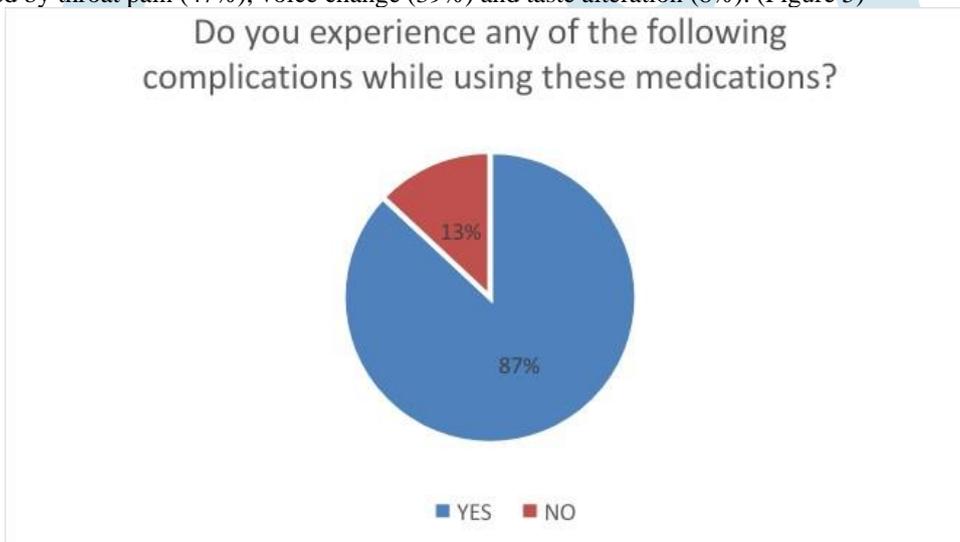


Figure 4: Complications following oral corticosteroid therapy

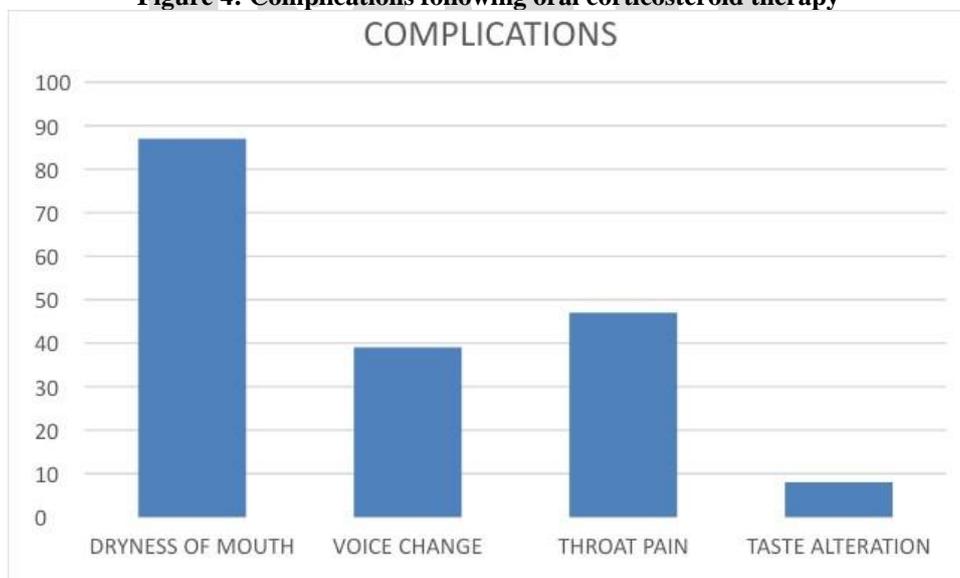


Figure 5: Complications following steroid therapy

DISCUSSION: Bronchial asthma is a chronic ailment which requires lifelong treatment. Inhaled corticosteroid therapy has reduced the usage of systemic steroids thus avoiding the complications of systemic steroids. Metered dose inhalers are commonly used by

the bronchial asthma patients. Deposition of the drug in the oral cavity and oropharynx results in oropharyngeal candidiasis which may result in discontinuation of the drug by certain patients. Usage of spacer device along with metered dose inhalers have reduced the incidence of oropharyngeal complications by decreasing the drug deposition in the oral cavity. The knowledge regarding oral candidiasis and maintaining proper oral hygiene helps in reducing the incidence of oral candidiasis.

Candida infection is diagnosed when the patient has signs and symptoms of oropharyngeal candidiasis as well as fungal culture is positive for candida (17). Symptoms of sore throat, dryness of mouth, dysphonia, altered taste sensation have been found in patients with Candida infection. Relying on only fungal culture report or only on oropharyngeal symptoms may greatly overestimate the incidence of candidiasis. The clinical presentation of Candida infection varies, symptoms are usually just bothersome some patients whereas the symptoms are severe for some patients who may even stop using the inhalers. These patients have poor compliance with inhaled steroids because of this complication. The postulated reason for candidiasis is the increased concentration of glucose in saliva resulting from the effect of deposited oropharyngeal corticosteroids (18).

Toogood et al. in their study demonstrated that usage of the tube and cone spacer showed reduction in the incidence of oropharyngeal candidiasis and an overall increase in the antiasthmatic potency of steroids. With the tube and cone spacer, there is less deposition of aerosol in the oropharynx and greater intrapulmonary delivery of the drug.

In a study using beclomethasone dipropionate, Willey and coworkers (19) reported that only one third of patients with oral thrush (visible white patches in the oral cavity with a positive fungal culture for Candida) complained of sore throat or hoarseness, while 24% of patients without thrush as defined above and 48% of patients on placebo aerosol in a British Medical Research Council Trial using steroids had similar symptoms.

Kriz and co-workers, in a 4-wk study with triamcinolone acetonide, reported that there is no difference in the frequency of side effects among patients using triamcinolone aerosol and those using a placebo aerosol. Hoarseness of voice, oral lesions, sore throat and thirst were complaints of equal frequency in both groups. 25 patients participated in their study out of which only suspicious oral lesions were cultured for fungi and none were found to be positive.

CONCLUSION:

In general, after the clinical examination of the patients and fungal culture, only 5% of the study population were found have oropharyngeal candidiasis, 40% of the patients had sore throat and hoarseness and the rest of the population were found to be normal under inhalation corticosteroid therapy. 95% of the population was found to be aware of the good oral hygiene and maintaining it.

REFERENCES:

1. British Thoracic and Tuberculosis Association. A controlled trial of inhaled corticosteroids in patients receiving prednisone tablets for asthma. *Br J Dis Chest* 1976;70:95.
2. Davies G, Thomas P, Broder I, et al. Steroid-dependent asthma treated with inhaler beclomethasone dipropionate. *Ann Intern Med* 1977;86:549.
3. Toogood JH, Lefcoe NM, Haines DSM, et al. Minimum dose requirements for steroid-dependent asthmatic patients for aerosol beclomethasone and oral prednisone. *J Allergy Clin Immunol* 1978;62:72.
4. Toogood JH, Lefcoe NM, Haines DSM, et al. A graded dose assessment of the efficacy of beclomethasone dipropionate aerosol for severe chronic asthma. *J Allergy Clin Immunol* 1977;59:298.
5. Bacal E, Patterson R. Long-term effects of beclomethasone dipropionate on prednisone dosage in the corticosteroid dependent asthmatic. *J Allergy Clin Immunol* 1978;62:72.
6. Williams MH Jr. Drugs five years after: beclomethasone dipropionate. *Ann Intern Med* 1981;95:464.
7. Toogood JH, Baskerville JC, Jennings B, Lefcoe NM, Johansson SA. Influence of dosing frequency and schedule on the response of chronic asthmatics to the aerosol steroid, budesonide. *J Allergy Clin Immunol* 1982;70:288.
8. Smith MJ, Hodson ME. High-dose beclomethasone inhaler in the treatment of asthma. *Lancet* 1983;1:265.
9. Toogood JH, Jennings B, Greenway RW, Chuang L. Candidiasis and dysphonia complicating beclomethasone treatment of asthma. *J Allergy Clin Immunol* 1980;65:145.
10. Newman S, Palia D, Morin F, Sheahan NF, Clarke SW. Deposition of pressurized aerosols in the human respiratory tract. *Thorax* 1981;36:52.
11. Dolovich M, Eng P, Ruftin R, Corr D, Newhouse MT. Clinical evaluation of a simple demand inhalation MDI aerosol delivery device. *Chest* 1983;83:36.
12. Newman SP, Moren F, Palia D, Little F, Clarke SW. Deposition of pressurized suspension aerosols inhaled through extension devices. *Am Rev Respir Dis* 1981;124:317.
13. Moren F. Drug deposition of pressurized inhalation aerosols. 1, Influence of actuator tube design. *Int J Pharm* 1978;1:205.
14. Godden DJ, Crompton GK. An objective assessment of the tube spacer in patients unable to use a conventional pressurized aerosol efficiently. *Br J Dis Chest* 1981;75: 165.
15. Hidinger KG, Perk S. Clinical trial of a modified inhaler for pressurized aerosols. *Eur J Clin Pharmacol* 1981;20: 109.
16. Toogood JH, Baskerville J, Jennings B, Lefcoe NM, Johansson SA. Use of spacers to facilitate inhaled corticosteroid treatment of asthma. *Am Rev Respir Dis* 1984;129:723.
17. Vogt FC. The incidence of oral candidiasis with use of inhaled corticosteroids. *Ann Allergy* 1979;43:205.
18. Knight L, Fletcher J. Growth of *Candida albicans* in saliva: stimulation by glucose associated with antibiotics, corticosteroids, and diabetes mellitus. *J Infect Dis* 1971;123(4):371.
19. Willey, R. F., Milne, L. J. R., Crompton, G. K., and Grant, I. W. B.: Beclomethasone dipropionate aerosol and oropharyngeal candidiasis, *Br. J. Dis. Chest* 70:32, 1