Role of Physiotherapy in the Management of Oral Submucous Fibrosis: A Case Control Study

Nidhi1, K Srikrishna2, Vishal Kumar3

ABSTRACT

Introduction: Oral submucous fibrosis is a disorder with no definitive treatment. So a treatment that results in symptomatic improvement in these patients is very important. The aim of the present study was to evaluate the use of physiotherapy in the management of oral submucous fibrosis patients.

Material and methods: 30 patients of OSMF were randomly divided into two groups. Group I – received physiotherapy and were on regular follow up. Group II – patients did not receive physiotherapy but were recalled and were under follow up.

Results: Significant improvement was observed in patients with physiotherapy after a period of 4 weeks.

Conclusion: Conservative management with physiotherapy is effective for oral submucous fibrosis.

Keywords: Role of Physiotherapy, Management of Oral Submucous Fibrosis

INTRODUCTION

Oral submucous fibrosis is a potentially malignant disorder that is characterized by blanching and stiffness of oral mucosa, trismus, and burning sensation in the mouth.1 It also produces hypomobility of the soft palate and tongue, and loss of gustatory sensation1. Occasionally there can be mild hearing impairment due to blockade of the eustachian tube. Although the etiology is not very clear but a definitive association of the same with areca nut (Areca catechu) consumption in variable forms has been established by many studies.1,5 The biological basis for OSMF remains unclear but cytotoxic, apoptotic and proliferative effects from areca nut agents have been proposed for it.6-11 Active oxygen species and reactive free radicals mediate alterations that lead to mutations and produce the genotypic and phenotypic manifestations of the disease. Both surgical and pharmacological treatment has been used in the management of OSMF. Conservative management has shown significant improvement in mouth opening and providing symptomatic relief to the patients.13-16 Physiotherapy along with micronutrients supplements has also been reported to show significant improvement in mouth opening in these patients.

Goal: Oral submucous fibrosis is a disorder with intricate pathogenesis and no perfect treatment. Both surgical and conservative treatment modalities have been tried. Surgical treatment have reported in scarring and further decrease in mouth opening in long standing cases. So a conservative treatment that can increase the mouth opening in these patients without any side effects is required. Hence the present study was carried out to evaluate the role of physiotherapy in these OSMF patients.

MATERIAL AND METHODS

30 patients who presented with signs and symptoms of OSMF in the department of Oral Medicine and Radiology in Hazaribagh college of dental sciences were included in the study after obtaining informed consent during a period of one year. Ethical approval was obtained from institutional board. These 30 patients were randomly divided in two groups. Group I patients were advised physiotherapy treatment and were recalled after four weeks (Table 1). The exercises included in this study were tongue blade exercise, china ball exercise, blowing the mouth and tongue protrusion exercises. Group II patients were not advised physiotherapy but were kept on regular follow up. All the patients were counselled to discontinue the habit and were subjected for oral prophylaxis to remove stains so that the investigators would notice if the patient resumes the habit.

Mouth opening for all the patients were recorded as an interincisal distance measured between mesioincisal edge of the maxillary and mandibular incisors. The measurements were made using vernier callipers and a metal scale. These recordings were tabulated at recall visit. Graph I shows the difference in mouth opening at the recall visit.

STATISTICAL ANALYSIS

Data was entered in Microsoft excel and presented as mean±SD and in percentage. Paired t test was analysed using SPSS (version 16). p value of less than 0.05 was accepted as indicating significance.

RESULTS

Out of 30 patients included in this study there was 3 drop outs. Data collected from remaining patients were used for calculation of the results.

Habit – all the patients gave a positive history of use of areca nut in various forms.

1 Assistant Professor, Department of Dental, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar. 2 HOD, Department of Oral medicine and Radiology, Hazaribagh College of Dental Sciences and Hospital, Hazaribagh, Jharkhand. 3 Professor, Department of Orthodontics, Hazaribagh College of Dental Sciences and Hospital, Hazaribagh, Jharkhand, India

Corresponding author: Dr Nidhi, Assistant Professor, Dental Department, JLNMC, India

How to cite this article: Nidhi, K Srikrishna, Vishal Kumar. Role of Physiotherapy in the Management of Oral Submucous Fibrosis: A Case Control Study. International Journal of Contemporary Medical Research 2019;6(1):A22-A24.

DOI: http://dx.doi.org/10.21276/ijcmr.2019.6.1.38
Mouth opening – It is a primary sign of OSMF so improvement in mouth opening was taken as a major parameter to determine the effectiveness of physiotherapy. Improvement was noticed in the group I receiving physiotherapy. A statistically significant difference in mouth opening of group I between baseline (25.57±6.02) and post physiotherapy (29.21±6.46) with p <0.0001 was observed whereas in group II there was no significant difference (graph-1).

**DISCUSSION**

OSMF is a poorly understood disease, the aetiology and the pathogenesis is complicated and is not understood till date. So the treatment modalities available are also very inadequate. All the patients included in this study gave a positive history of use of areca nut in variable forms. This was also reported by Canniff et al in their article on pathogenesis and management of oral submucous fibrosis. Similar results were found by the study done by A. Kumar. Thus it supports the association of areca nut with OSMF suggesting its aetiologic role in causation of the disease. In the present study out of 30 patients 27 were male patients. This was consistent to the results of Lal et al who reported 96.67% male preponderance. Most of the patients were in age group of 20 to 30 years. This was similar to the reports of Borle and Borle where most of the patients were less than 30 years. Similar results were shown by Maher et al where 70% patients were less than 30 years. Patients in group I showed significant improvement after physiotherapy. This was similar to a study carried out in Nepal on 54 oral submucous fibrosis patients which showed substantial improvement in mouth opening following physiotherapy exercises. Another study done by Nidhi et al showed Conservative management with micronutrients and physiotherapy is very effective for oral submucous fibrosis. Studies also show that conservative treatment options are effective only in cases where mouth opening has not been much compromised but in cases where mouth opening is very less the conservative options are not very effective. Some other studies have also shown the effectiveness of physiotherapy when combined with surgical approaches.

**CONCLUSION**

This study concludes that physiotherapy is a non invasive option that yields significant improvement in signs and symptoms of OSMF. So physiotherapy along with cessation of chewing betal quid can be used for symptomatic relief of OSMF patients.

**REFERENCES**

1. Lal D. Diffuse oral submucous fibrosis. All India Dent Assoc 1953; 26:1-3.
2. Canniff J P, Harvey W. The aetiology of oral submucous fibrosis: The stimulation of collagen synthesis by extracts of areca nut. Int J of Oral Surg 1981; 10:163-7.
3. Harvey W, Scott A, Meghji S, Canniff J P. Stimulation of human Buccal mucosa fibroblasts in vitro by areca nut alkaloids. Arch oral boil 1986; 31: 45-9.
4. Maher R, Lee A J, Warnakulasuriya KA, Lewis JA. Role of areca nut in the causation of oral submucous fibrosis: a case control study in Pakistan. J of Oral Pathol Med 1994; 23: 65-9.
5. Canniff JP, Harvey W, Harris M. Oral submucous fibrosis: Its pathogenesis and management. Br Dent J 1986; 160: 429-34.
6. Tilakaratne WM, Klinikowski MF, Sakwi T, Peters TJ, Warnakulasuriya S. Oral submucous fibrosis: Review on aetiology and pathogenesis. Oral Oncol 2006; 42: 561-8.
7. Chang MC, Wu HL, Lee JJ. The induction of prostaglandin E2 production, cell cycle arrest and cytotoxicity in primary oral keratinocytes and KB cancer cells by areca nut ingredients is differentially regulated by MEK/ERK activation. J Biol Chem 2004; 279: 50676-83.
8. Jeng JH, Wang YJ, Chang WH. Reactive oxygen species are crucial for hydroxycavicol toxicity towards KB epithelial cells. Cell Mol Life Sci 2004; 61: 83-96.
9. Tsai C L,Kuo My, Hahn L J, Kuo YS, Yang PJ, Jeng J H. Cytotoxic and cytostatic effects of arecoline on oral mucosal fibroblasts. Proc Natl Sci Coun Repub China B. 1997; 21: 161-7.
10. Le PV, Gornitsky M, Domanowski G. Oral stent as treatment adjunct for oral submucous fibrosis. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1996; 81: 148-50.
11. R M Borle, S R Borle. Management of Oral Submucous Fibrosis: A Conservative Approach. J of Oral Maxillofac Surg 1991; 49: 788-91.
12. A Kumar, Anjana Bagewadi, Vaishali Keluskar. Efficacy of lycopene in the management of oral submucous fibrosis. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2007; 103: 207-13.
13. Maher R, Aga P, Johnson N W. Evaluation of multiple
micronutrient supplementations in the management of oral submucous fibrosis in Karachi, Pakistan. Nutr Cancer. 1997; 27: 41-7.

14. Stephen Cox, Hans Zoellner. Physiotherapy treatment improves oral opening in oral submucous fibrosis. J of Oral Pathol Med 2009; 38: 220-226.

15. Nidhi Thakur, Vaishali Keluskar, Anjana Bagewadi et al. Effectiveness of micronutrients and physiotherapy in the management of oral submucous fibrosis. Int J contem dentistry 2011; 1: 101-105.

16. Richa Dharwal, Sanjit Mukherjee, Sweta Pattanayak. Zinc and Vitamin A can minimise the severity of oral submucous fibrosis. BMJ 2010; 7: 23-29.

17. Lai D R, Chen HR, Lin L M. Clinical evaluation of different treatment methods for oral submucous fibrosis. A 10 year experience with 150 cases. J of Oral Pathol Med 1995; 24: 402-6.

Source of Support: Nil; Conflict of Interest: None

Submitted: 09-12-2018; Accepted: 21-01-2019; Published: 28-01-2019