



STUDY OF EFFICACY OF CURCUMIN IN ORAL SUBMUCOUS FIBROSIS PATIENTS IN MY CLINICAL PRACTICE

Dental Science

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ABSTRACT

Oral submucous fibrosis (OSMF) is a potentially malignant disorder carrying a high risk of malignant transformation. A wide range of treatment modalities have been proposed for OSMF but none have proved curative or reduced the morbidity significantly. *In-vitro* and *in-vivo* studies suggested curcumin as an anticancer, antioxidant and anti-inflammatory agent. Thus based on this literature survey the study was undertaken.

AIM: To evaluate the efficacy of curcumin for the treatment of clinical stage 2 OSMF patients and to compare it with patients receiving placebo drugs. **STUDY DESIGN AND SAMPLE SIZE:** A randomized single blinded placebo controlled clinical trial was conducted in 120 clinical stage 2 OSMF patients with clinically and histopathologically confirmed diagnosis. **MATERIALS AND METHODS:** 120 clinical stage 2 patients selected for the study were divided into 2 groups with 60 patients each. Group 1 patients were given placebo capsules. Group 2 patients were given curcumin capsules of 500 mg. The primary outcome measures were to note the subjective symptoms parameters. These parameters were analyzed at baseline. after 6 months. ANOVA, students t test and p value were utilized for statistical inferences. **RESULTS:** Patients in group 2 showed statistically significant improvement in all the subjective signs and symptoms with p value of < 0.001 when compared with group 1 patients. **CONCLUSION:** It is evident from the study that curcumin holds good promise in the treatment of OSMF

KEYWORDS

Osmf,curcumin,,potentially malignant disorder

INTRODUCTION

Joshi in 1953 is credited to have coined the term Oral submucous fibrosis. Epidemiological studies show a unique prevalence of this premalignant condition in India and South East Asia¹. It has a specific geographic distribution and predominantly affects the Asians².

Pindburg has summed up the clinical and histopathological features in his definition for OSMF as "an insidious chronic disease affecting oral mucosa or any part of the oral cavity and occasionally extending into pharynx and Esophagus, although occasionally preceded by and/or associated with vesicle formation, it is always associated with juxtraepithelial inflammatory reaction followed by fibro elastic change in the lamina propria with epithelial atrophy leading to stiffness of oral mucosa causing trismus and inability to eat . The pathogenesis of the disease is thought to be multifactorial, the exact etiology and pathogenesis is still obscure, with chewing of pan masala /gutka , arecanut being recognized as one of the most significant risk factors for OSMF. It is predominantly seen in the second or third decade, and recent data suggest a male predominance. The onset is insidious and the clinical presentation depends on the stage of the disease A wide range of treatment modalities have been proposed for OSMF but none have proved curative or reduced the morbidity significantly. Hence, the search for effective treatment modality still continues. the study was undertaken to evaluate the efficacy of curcumin for treatment of clinical stage 2 OSMF patients and to compare it with patients receiving placebo drugs both clinically .

MATERIALS AND METHODS:

Study Design: A randomized single blinded placebo controlled clinical trial study was conducted in my clinical practice. Informed consent was obtained from all the subjects who after histopathological diagnosis of OSMF, 120 clinical stage 2 patients selected for the study were divided into 2 groups with 60 patients each. Baseline parameters were recorded. Group 1 patients were given placebo capsules and were instructed to take 2 capsules per day. Group 2 patients were given curcumin capsules of 500 mg and were instructed to take 2 capsules per day making a daily dose of 1 gram.

The primary outcome measures were to note the subjective symptoms like burning sensation, difficulty in mouth opening, intolerance to spicy food and difficulty in swallowing, signs like shrunken uvula, hockey stick appearance of uvula, and objective parameters like blanching, sites of fibrosis, burning sensation, pain, mouth opening, tongue protrusion and cheek flexibility. Patients were explained about visual analog scale (VAS) and were asked to mark the severity of burning sensation (BS) and pain on it. The patients were enquired for the improvement of burning sensation and pain at the subsequent visits and were asked to mark it again on a VAS scale. Burning sensation and

pain was then recorded on a percentage reduction basis. The parameters like Interincisal distance (IID), tongue protrusion and cheek flexibility were recorded as mentioned by Ranganathan *et al.*, 10. Interincisal distance (IID) was measured with vernier caliper between the right maxillary and mandibular central incisors on maximum opening. If these teeth were missing, they were measured on the corresponding teeth of the left arches. The measurements at subsequent visits were done at the previously recorded sites only, to avoid misinterpretation. Tongue protrusion was measured with a scale as the distance of movement of the tongue beyond the incisal tips of the lower incisors. Cheek flexibility was measured by a line joining tragus of the ear and angle of the mouth was drawn. An imaginary perpendicular line from the outer canthus of the ipsilateral eye was extended downwards to intersect the ala-tragus line using a protractor at 90°. The point of intersection was marked as a reference point. This was done on both right and left sides. The distance between the two reference points was recorded at normal centric occlusion as C1. The subjects were asked to blow the cheeks fully with lips closed and the distance between the reference points was recorded as C2. The difference between the 2 values (C2-C1) was used as measure of cheek flexibility. Subjective and objective parameters were entered as scores in the proforma. All measurements were taken by the same examiner to avoid observer variability.

Follow up: These parameters were analyzed at baseline and 6th month.

STATISTICAL ANALYSIS:

The mean scores of 2 groups were statistically tested using ANOVA. The differences in clinical parameters from baseline and 6th month and histopathological parameters from baseline and 6th month were compared between groups 1 and 2 by students't' test. For all tests, a 'p' value of 0.05 or less was utilized for statistical significance.

Comparison of Signs and Symptoms between Group 1 There were 47(94%) of patients with difficulty in mouth opening 46(90%) with burning sensation, 12(28%) with intolerance to spicy food, 5(8%) with difficulty in swallowing, 7(18%) with shrunken uvula and 2(4%) with hockey stick appearance of uvula at baseline and even after 6th month in group 1 patients with p value as 1.000 which was statistically not significant. In group 2 patients there were 45(92%) patients with difficulty in mouth opening 46(92%) with burning sensation, 20(42%) with intolerance to spicy food, 4(8%) with difficulty in swallowing, 14(28%) with shrunken uvula and 4(10%) with hockey stick appearance of uvula at baseline. After 6 months when these signs and symptoms were compared there were 2(4%) of patients with difficulty in mouth opening, 1(2%) of patients with burning sensation, no patients reported intolerance to spicy food and, difficulty in

swallowing, there were 9(18%) of patients with shrunken uvula in group1 patients with p value as <0.001 which was statistically

significant except for hockey stick appearance of uvula there was no change with p value as 1.000

Table 1: Comparison Of Signs And Symptoms Between Group 1 And Group 2 Subjects From Baseline To 6th Month

Signs & symptoms	Group 1		p value		Significance		Group 2		p value		Significance	
Baseline	6th month				Baseline				6th month			
n	n		%		n		%		n		%	
Difficulty in mouth opening	46	94.0%	47	94.0%	1.000	NS	45	92.0%	2	4.0%	< 0.001	VHS
Burning sensation	44	90.0%	45	90.0%	1.000	NS	45	92.0%	1	2.0%	< 0.001	VHS
Intolerance to spicy food	12	28.0%	13	28.0%	1.000	NS	20	42.0%	0	0.0%	< 0.001	VHS
Difficulty in swallowing	5	8.0%	4	8.0%	1.000	NS	4	8.0%	0	0.0%	< 0.001	VHS
Shrunken uvula	7	18.0%	8	18.0%	1.000	NS	14	28.0%	9	18.0%	< 0.001	VHS
Hockey stick uvula	2	4.0%	2	4.0%	1.000	NS	5					

DISCUSSION

Most of the patients were in third decades of life. Our study shows a male predominance. This male predominance in our study could be due to the arecanut and gutka chewing habit which is practiced by younger individuals in this part of the country. It was noted that the majority of subjects in the study chewed only gutka. Gutka is a mixture of arecanut, tobacco, lime, catechu and flavouring compounds which are marketed in small sachets or pouches. The habit-forming process of gutka chewers is due to tobacco and areca nut, which if consumed for longer duration and frequencies is responsible for causing addiction, leading to OSMF¹¹. Hence we presume that gutka and arecanut plays an important role in the etiology of OSMF. Patients in group 2 (curcumin group) showed statistically significant improvement in all the signs and symptoms like difficulty in mouth opening, burning sensation, intolerance to spicy food, difficulty in swallowing and shrunken uvula when compared with group 1 patients (placebo group) where patients had similar signs and symptoms at baseline and 6th month. Statistically significant reduction of burning sensation was also observed in different studies. With inter-group comparison in Kopuri *et al.*,¹² study patients under curcumin group showed a better reduction in severity of burning sensation but did not differ enough to be statistically significant ($P>0.05$), where as in Das *et al.*,¹ study statistically significant quicker reduction of burning sensation was noted. Agarwal *et al.*,¹³ study showed the change in burning sensation on VAS was statistically significant ($P<0.001$). Hazarey *et al.*,¹⁴ study reported VAS scale with spicy and normal food the average reduction was 64 (42-73) and 77 (70.5-82) as compared to 34 (14.5-64.5) and 64 (46-75.5) respectively in control group. Yadav *et al.*,¹⁵ reported that burning sensation improved in turmix group at the end of 1st month mean values of 63.5, to 0 at the end of 3rd month. Complete resolution of burning sensation was noted with turmix. Reduction in burning sensation with turmix was statistically significant when compared with conventional therapy ($P<0.001$).

RESULT

Comparison of subjective symptoms like burning sensation, difficulty in mouth opening, intolerance to spicy food, difficulty in swallowing, signs like shrunken uvula, hockey stick appearance of uvula and objective parameters like blanching, sites of fibrosis, burning sensation, pain, IID, tongue protrusion and cheek flexibility was done between group 1 and Group 2 patients from baseline to 6th month showed statistically significant changes in group 2 (curcumin) with $p<0.001$. All the patients in the study tolerated the treatment regimens well. None of the patients reported any allergic or abnormal reaction nor did elicit any signs and symptoms of toxicity to the treatment modality. It is evident from the study that curcumin holds good promise in the treatment of OSMF.

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