Evaluation of Efficacy of Turmeric in Management of Oral Submucous Fibrosis

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ABSTRACT

Aim and Objective: The aim of this study was to evaluate the efficacy of turmeric in oral submucous fibrosis (OSMF) patients, and to check the treatment efficacy of turmeric in terms of burning sensation on Visual Analog Scale (VAS) and mouth opening, and to evaluate the group which showed the maximum improvement.

Materials and Methods: 60 subjects diagnosed with OSMF were included in this study. The patients were administered commercially available turmeric; their mouth opening and burning sensation on VAS scale were evaluated at regular intervals, and the data was then compared.

Results: The improvement in mouth opening was not significant; however, the change in burning sensation on VAS was significant.

Conclusion: Treatment of OSMF with turmeric is an affordable and effective treatment methodology; however, further research needs to be done.

Key words: Oral submucous fibrosis, turmeric, visual analog scale

Introduction

Oral sub mucous Fibrosis is a well known clinical entity since the time of Sushruta when it was known as Vidari.[1] It has been a subject of controversy ever since Schwartz[2] described an arcane and inexplicable Fibrotic condition affecting the oral cavity in 5 Indian women of East Africa in 1952. Pindborg and Sirsat[3] described oral sub mucous fibrosis as an insidious Chronic disease affecting any part of the oral cavity and sometimes the Pharynx although occasionally preceded by or associated with vesicle formation, it is always associated with a juxta-epithelial inflammatory reaction followed by a fibro elastic change of the lamina propria with epithelial atrophy leading to stiffness of oral mucosa and causing trismus and inability to eat.

The malignant transformation rate of OSMF has been reported to be around 7.6%.[4] Although a number of factors have been worked upon, no single pathophysiology has been agreed on and, hence, no effective treatment has come to light. Thus, the management of OSMF poses a great challenge.[5] One new treatment modality which is gaining recognition is the use of turmeric in OSMF. A number of studies are being conducted all over the world to seek the potential of turmeric and its active component, curcumin, as a chemopreventive agent. Keeping in mind the studies that have been conducted so far and the therapeutic effects of turmeric, we conducted a study with the aim of evaluating the efficacy of turmeric in patients with OSMF.

Materials and Methods

This study was conducted in the Department of Oral Medicine and Radiology after obtaining clearance from the institutional ethical committee. 60 patients who were clinically diagnosed with OSMF were selected for this study. Subjects within the age group of 18-55 years were selected for this study and informed consent was obtained from all the subjects. Complete blood tests of the subjects were done to rule out any other pathophysiology. Patients who showed malignant changes or who were not willing for treatment were excluded. For the study, the patient’s mouth opening was...
measured using a vernier caliper and the burning sensation was recorded on the Visual Analog Scale (VAS). Using the interincisal distance, the patients were divided into four different groups based on Lai’s (1995)[6]

**Staging of OSMF as follows:**
- Group A: >35 mm
- Group B: Between 30 and 35 mm
- Group C: Between 20 and 30 mm
- Group D: <20 mm

Each patient was given the commercially available turmeric, (Himalaya Turmeric). This tablet was given orally thrice daily for 1 month. The responses were assessed clinically on a bimonthly basis. Every time the patient was recalled, the patient’s mouth opening and burning sensation on VAS were recorded and compared. Student’s $t$-test was used for statistical analysis.

**RESULTS**

Out of the total 60 patients diagnosed with OSMF included in this study, the maximum number of patients was in the age group 21-30 years, accounting for 36.7% of the study group. The mean age of the study group patients was 35.1 ± 11.4 years. The male:female ratio in the study group was 2.3:1. These subjects were then divided into four different groups based to Lai’s classification, and the maximum number of patients, i.e. 24 out of 60 patients, belonged to group C stage of OSMF and the least number of patients, i.e. 6 out of 60 patients, belonged to group B. Out of the remaining 30 patients, 14 patients belonged to group A while 16 patients were of group D. Maximum number of erosions was observed in subjects belonging to group B, along the right and left buccal mucosa.

When the groups were individually studied, an improvement of 4.01% (10.4 mm) in mouth opening with an improvement of 82.50% (33) in burning sensation on VAS was noticed in group A. In group B, an improvement of 1.52% (1.4 mm) in mouth opening and 83.33% (5) in burning sensation was seen, while in group C, an improvement of 0.77% (2.3 mm) in mouth opening and 66.10% (39) in burning sensation was noticed. In group D, an improvement of 5.16% (6.5 mm) in mouth opening and 71.67% (43) in burning sensation was seen.

Graphs 1 and 2 show the comparison of improvement in mouth opening and burning sensation (VAS) respectively, among the four groups. From the data obtained, we could conclude that the group which showed maximum improvement in mouth opening was group D and the group that showed least improvement was group C. Regarding burning sensation, group B showed maximum improvement, while group C showed the least improvement. When the overall improvement was considered, the change in mouth opening was not statistically significant ($P = 0.109$), with the improvement in mouth opening being 0.69 cm. The change in burning sensation on VAS was statistically significant ($P < 0.001$).

**Discussion**

The etiology and pathogenesis of the disease is not well known; hence, it is believed that OSMF is caused by many factors. Pindborg, in 1968,[7] and Caniff et al., in 1986,[8] described the disease as a reaction to capsaicin, an irritant in chilies, but this was not completely proved in experimental work.[9] Although a number of factors have been thought to be responsible, yet no effective
One new treatment modality which is gaining recognition is the use of turmeric in OSMF. Curcumin is the principal curcuminoid and comprises approximately 2-5% of turmeric.[10] When the 60 patients were administered turmeric, an improvement in mouth opening and burning sensation was noticed. Group A showed an improvement of 4.01% (10.4 mm) in mouth opening, in comparison to 1.52% (1.4 mm), 0.77% (2.3 mm), and 5.16% (6.5 mm) in groups B, C, and D, respectively. We could hence hypothesize that maximum improvement was seen in group D due to the fact that curcumin has fibrinolytic and antiinflammatory action and the severity of fibrosis and inflammation was maximum in group D. Curcumin exerts anti-inflammatory activity by inhibiting a number of different molecules that participate in the process of inflammation.[11] Curcumin also has a fibrinolytic property due to its ability to inhibit lipid peroxidation and check cellular proliferation, thereby reducing the rate of collagen synthesis.[10]

The other factor that we considered in our study was improvement in burning sensation on VAS. An improvement of 82.50% (33), 83.33% (5), 66.10% (39), and 71.67% (43) was seen in groups A, B, C, and D, respectively. Maximum improvement was seen in group B, which can be due to the fact that group B subjects had the maximum number of erosions present on clinical examination. When the overall improvement was considered, the change in mouth opening was not statistically significant ($P = 0.109$); however, the improvement in mouth opening was 0.69 cm which was similar to the result of a study conducted by Das et al. in 2010, where they noticed an improvement of 0.87 cm in mouth opening. Although the improvement in mouth opening was not significant ($P = 0.109$), we still recorded an improvement of 0.69 cm, which could be due to the fact that this was a short-term study. The change in burning sensation on VAS was statistically significant ($P < 0.001$), which was similar to the observations by Das et al.[12]

Conclusion

Thus, we can conclude that turmeric has a therapeutic effect in patients diagnosed with OSMF. Turmeric is considered a safe, nontoxic, and effective alternative for many conventional drugs due to its distinguished therapeutic properties and multiple effects on various systems of the body. Its role in the treatment of oral cancers is very promising. However, there is not enough information and research in this field, and therefore, further research is required to determine the efficacy of curcumin. As this was a short-term study, further research is needed with a larger sample size over long term to achieve more definite results.

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