

ROLE OF SPIRULINA IN MANAGEMENT OF BURNING SENSATION IN ORAL SUBMUCOUS FIBROSIS - RANDOMIZED CLINICAL TRIAL

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ABSTRACT

OSMF is a potentially malignant disorder which debilitates a patient's quality of life. Various number of medications have been tried but not all are very effective. Antioxidants have shown to reduce the symptoms and therefore a study was conducted using Spirulina, a natural algae that is incredibly high in protein, vitamins and antioxidants, to see if this new group of antioxidant helped in improving the symptoms.

Key words : Oral Submucous fibrosis, Spirulina, Antioxidants.

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INTRODUCTION

Oral submucous fibrosis (OSMF) is a potentially malignant disorder affecting oral cavity.^{1,2} Burning sensation is one of the clinical symptoms of OSMF due to atrophy of the oral mucosa. It is believed that the areca nut alkaloids and tannin play an important role in etiology of OSMF.³ Number of studies has proven that the management of premalignant diseases should include antioxidants. Antioxidants such as lycopene, ALA100 etc. have been tried with various degree of success.^{4,5} Spirulina is an antioxidant that has been used for treatment of several oral mucosal lesion with successful results, however its effects on OSMF are not well documented. Therefore, a study was carried out to evaluate role of spirulina as an antioxidant adjuvant to corticosteroid injections in treating burning sensation in OSMF.

STUDY

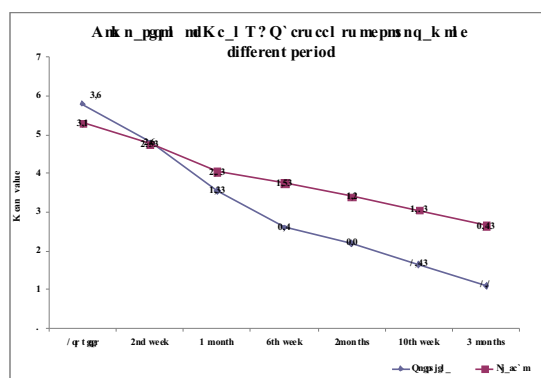
This study consisted of 40 clinically and histopathologically confirmed stage 1 and stage 2 OSMF patients. Patients with any systemic disorders and on any other medications or therapy were excluded from the study. 40 patients were divided into two groups, group A (spirulina) and group B (placebo). Both the groups were advised to discontinue the use of areca nut in all preparations before starting treatment. Both the groups were treated with steroid injection (Betamethasone 4 mg/ml) twice a week. Group A was given antioxidants (Spirulina 500 mg) orally twice daily for 3 months and group B was given placebo capsules daily two times for 3 months. On every visit, burning sensation was evaluated by using the Visual Analog Scale (VAS), weekly over a period of 3 months. The result thus obtained was subjected to statistical analysis. Student's paired and unpaired "t" tests and Chi square test were used for statistical evaluation.

RESULTS

The data collected was statistically analyzed and the results showed the following observations. Maximum numbers of patients were in the third decade of life. The mean age of the individuals in group A was 28.05 yrs, whereas in group B the mean age was 30.75 yrs. The mean value of initial VAS of group A was 5.8 and group B was 5.3; statistically no

differences were found. There was statistical significance in favor of group A found when values of both groups were compared every 15 days. In group A, VAS by the end of 2nd week compared with that of initial VAS values, the mean difference was 1.00 ± 0.79472 . In group B, VAS by the end of 2nd week compared with that of initial VAS value, the mean difference was 0.5500 ± 0.82558 . When inter-comparison between two groups was done it was found to be statistically non-significant. VAS in group A at the end of 6 week compared with that of initial VAS mean difference value was 3.200 ± 1.19649 . In group B, VAS at the end of 6 week compared with that of initial VAS mean difference value was 1.5500 ± 1.19097 . When two groups were compared it was found to be statistically very highly significant in favor of group A and these values remained very highly significant even after 3 months period (post-treatment).

In group A, the mean paired VAS difference was 4.6, and in group B the paired VAS difference was 2.65. When both the groups were compared, VAS values were less in group A than in group B [Figure 1].



DISCUSSION

To date OSMF is poorly understood and unsatisfactorily treated. Based on clinical, epidemiological, and in vitro studies, areca nut chewing is considered an important predisposing factor. Various methods have been tried to bring relief from burning sensation, these include intralesional injections of corticosteroids, placental extracts, or hyaluronidase either alone or in combination, micronutrient

supplementation, physiotherapy, and surgery.⁶ Spirulina is a microalgae, used in daily diet of natives in Africa and America. It contains phenolic acid, tocopherols, and beta-carotene which are known to exhibit antioxidant properties.⁷ Spirulina has been used for the treatment of several oral mucosal lesions with successful results. However, its effects on OSMF are not well documented.

In this study, though the reduction in burning sensation was sustained in both the groups, group A seemed to be more effective when compared to group B. The relief from burning sensation in patients treated with spirulina is probably due to the contents of spirulina which contains beta-carotene, phenolic acid, tocopherols, and various micronutrients.⁷ A similar finding was reported in 1997, which stated that, multiple micronutrient supplements produced relief from burning sensation in 85% patients.⁸ Administration of beta-carotene systemically and topically would improve the integrity of the epithelium as well as induce redifferentiation of dysplastic epithelium.⁹

CONCLUSION

The present study clearly emphasizes that along with habit counseling spirulina has a definitive protective role in reducing clinical signs and symptoms of OSMF. Oral antioxidant spirulina can be used as an adjuvant therapy in management of burning sensation in OSMF patients. Spirulina was well tolerated by these patients and no side effects were reported as well. More patient sample, with longer period of follow-up, is required to get further conclusion on the role of spirulina in the management of burning sensation in OSMF.

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