Review Article

Adjuvant therapy for oral submucous fibrosis

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A B S T R A C T

Oral Submucous Fibrosis (OSMF) is a precancerous condition including oral mucosa, oropharynx, and rarely the larynx resulting from habits like areca nut chewing, pan masala chewing, smoking and consumption of hot and spicy food like chillies. The various treatment modalities are used to provide symptomatic relief. This article is the collection of published literature on the adjuvant therapies in treating OSMF. The literature suggest the use of curcumin, tulsi, aloe vera, spirulina, sesame oil and lycopene as treatment modalities for OSMF. The relevant literature proves that these adjuvant modalities promise a natural and cost-effective treatment option along with lifestyle modification will help in curing the disease. Though studies need to be evaluated to enhance its awareness and use by patients as a primary noninvasive therapeutic modality.

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1. Introduction

Oral submucous fibrosis (OSMF) is a chronic precancerous condition which is characterized by juxta-epithelial inflammatory reaction and leads to progressive fibrosis of the submucosal tissues of oral cavity.¹ OSMF etiopathogenesis has not been fully understood so far, but areca nut has been reported as main etiological factor. Arecoline and Tanin found in areca nut result in an increased synthesis of collagen and decreased breakdown.² Chilies, tobacco, lime, dietary deficiency, abnormal iron metabolism, collagen disorders, bacterial infection, immunological disorders, genetic susceptibility and change in salivary composition are also found as other etiological causes.

Symptoms of OSMF differ with progression of disease. Initial signs are ulcerations of the mucosa, and feeling of burning sensation. Stiffness and blanching of oral mucosa occurs as the disease progress. The most distinctive characteristic of OSMF is palpable fibrous bands in oral mucosa³,⁴ results in marked stiffness and difficulty to open mouth.⁵,⁶ Other characteristics of the disease include dryness of oral cavity, recurrent ulcer and pigmentation of the oral mucosa, burning sensation, reduced opening of the mouth and protrusion of the tongue. Histopathological review reveals subepithelial fibrosis and chronic inflammation which is followed by hyalinisation and vascular loss, parakeratosis squamous hyperplasia.⁷,⁸

The various treatment protocols which have been attempted to improve the signs and symptoms of OSMF include intralesional injections of corticosteroids, placental extracts and hyaluronidase alone or in combination, laser treatment, surgical, IFN-γ, peripheral vasodilators administration, minerals, sugars, lignin, immune milk, turmeric, lycopene and micronutrient supplements. Various
physiotherapeutic modalities have also shown favourable results. Natural ayurvedic treatment along with lifestyle change can help to reduce the symptoms of OSMF and thus provide relief to the patient without having to cause side effects. This article provides a review of various adjuvant treatment modalities of OSMF.

2. Adjuvant Therapies

2.1. Curcumin

Curcumin is a plant-isolated polyphenol (Curcuma longa) L. (Zingiberaceae) compound found in Southern Asia. The exact mechanism of action and determination of bioactive materials have been examined for the medicinal properties of turmeric which is curcumin source. It has three properties such as lipid peroxidation inhibition, cellular proliferation screening and inhibition of collagen synthesis. Many studies show effects curcumin in increased mouth opening of patient with OSMF. Studies shows improvement in mouth opening and burning sensation. Curcumin’s antioxidant activity was reported in 1975. It acts as an oxygen-free radical scavenger. Curcumin has a powerful inhibitory effect in human keratinocytes and fibroblasts against \( H_2O_2 \)-induced damage.

2.2. Aloe Vera

Aloe vera works as a wound-healing hormone and serols that is highly anti-inflammatory. Sudarshan et al reported improvement of burning sensation and opening of the mouth compared with antioxidant treatment. Aloe vera contains 75 potentially active constituents which includes vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids. Vitamins are vitamin A (beta-carotene), C and E which are antioxidants and help to neutralize free radicals. Bradykinase helps decrease inflammation when applied topically to the skin or mucosa. The gel of aloe vera leaves contained polysaccharides which has wound healing, anti-inflammatory, anticancer, immunomodulatory and gastro-protective properties. Properties of aloe vera suggest the possibility of its use in the management of OSMF.

2.3. Tulsi

Tulsi increases immunity and enhances metabolism. It is an extract which has been found inhibiting enzymes to reduce inflammation. It is also decreasing depression and exhibits antioxidant properties. It has antioxidant, anti-inflammatory, chemo-preventive, anticarcinogenic and immunomodulatory etc. According to Adit Srivastava et al., the synergistic activity of tulsi has resulted in greater effectiveness and highly effective anti-OSMF therapy. During the first month of testing, it triggered an early, prolonged and substantial decrease during burning sensation, both clinically and statistically. Mouth opening has also changed significantly. In extreme cases, the findings were better representing its greater efficacy.

2.4. Sesame oil

Sesame plant (Sesamum indicum/tila) is Pedaliaceae family which was considered a gift of nature to mankind due to its nutritious properties and other beneficial health effects. The seeds are known as "gingelly" or "til". It is a good source of vitamin E with high concentration of polyunsaturated fatty acids and contains antioxidants namely sesamol, sesamin and sesamolin which help in treatment of OSMF.

2.5. Spirulina

It is microalgae, found in native of African and American everyday diets. It contains phenolic acid, tocopherols and beta-carotene with antioxidant properties. Spirulina has been used with positive results in treating many oral mucosal lesions. According to Shetty P et al spirulina shows the effective result in treating OSMF pateints. Use of spirulina in the successful management of OSMF is attributed to its antioxidant, anti-inflammatory and immuno-modulating properties. The blue green algae, spirulina is rich in carotenoids and other micronutrients possessing chemo preventive potential. It has been used to test the clinical activity in reversing the oral precancerous lesions like leukoplakia.

2.6. Lycopene

Lycopene is bright red carotene with carotenoid pigment found in fruits and vegetables including tomatoes, apricots, papaya, watermelon, carrots and other fruits of yellow colour. Through maintaining essential cellular biomolecules including lipids, lipoproteins, proteins and DNA, it helps in preventing carcinogenesis and atherogenesis. It is the most effective biological antioxidant agent which is also used in treatment of OSMF. Studies has reported statistically significant of lycopene supplement at a daily dose in improving patients with oral submucous fibrosis.

3. Conclusion

OSMF is a chronic debilitating illness, of multifactorial etiology and no single traditional therapy has proven conclusive. Adjuvant medicine is expected to be used for longer periods of time, because they have fewer side effects. It is said to be safe and cost is also less hence it can be used along with traditional treatment of OSMF. Even literature supports the successful outcome of the adjuvant therapies in management of oral submucous fibrosis, but there is inadequate evidence for definitive form of treatment. Therefore, appropriate studies need to be reviewed to increase understanding of adjuvant therapy for treatment of
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5. Conflicts of Interest
There are no conflicts of interest.

References

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