Recent Advancements in Oral Lichen Planus Management: An Overview

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ABSTRACT

Introduction: Lichen planus is a chronic inflammatory, auto-immune, mucocutaneous disease of which the etiology is unknown. In Greek “lichen” means tree moss and “planus” means flat. It affects the skin, mucous membrane, nails, and hair. It is seen in 1 to 2% of the population. As the exact causative factor for oral lichen planus (OLP) is a matter of conflict, the failure to achieve proper or specific treatment for it may be reason for its incomplete regression. Corticosteroids are the mainstay of OLP but because of their adverse effects various other agents have been tried in the treatment of OLP.

Aim: The aim of this review is to provide an update on the recent advances in the treatment of OLP.

Results: An electronic search was conducted across Medline, Cochrane, Web of Science databases, and Google Scholar for the purpose of literature analysis on the mentioned topic. The studies were reviewed and compared. This article summarizes the recent advances in the treatment of OLP.

Conclusion: Oral lichen planus has been an advanced researched oral potentially malignant disorder over the years. The newer treatment modalities have been considered to be beneficial with lesser amount of side effects than corticosteroids like amlexanox (AX), aloe vera gel, green tea, curcumin, propolis, and lycopene.

Clinical significance: Oral lichen planus is seen in 1 to 2% of the population who come with varied symptoms or may be asymptomatic. Although treatment options are plenty, the mainstay of treatment is corticosteroids. However, the use of alternate therapeutics is proven to be effective with lesser side effects.

Keywords: Aloe vera, Green tea, Oral lichen planus, Propolis, Recent advances.


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INTRODUCTION

Lichen planus is a chronic inflammatory, auto-immune, mucocutaneous disease of which the etiology is unknown. In Greek the meaning “lichen” is tree moss and “planus” is flat. It affects the skin, mucous membrane, nails, and hair. It is seen in 1 to 2% of the population.

As the exact causative factor for OLP is a matter of conflict, the failure to achieve appropriate or exact treatment for it may be the reason for its incomplete regression. It can also undergo malignant transformation due to the lack of universal diagnostic criteria. The most predictably beneficial medication or the first line of treatment of OLP has been corticosteroids, but because of their adverse effects alternate therapeutic approaches are being carried out. Various new agents to treat OLP are the following: AX, aloe vera gel, amitriptyline, green tea, curcuminoids, ignatia, low-intensity laser therapy, hyaluronic acid (HA), propolis, purslane extract, lycopene, pimecrolimus, and topical thalidomide. Amitriptyline, AX, thalidomide, aloe vera, HA, and propolis are used as topical agents, whereas purslane, lycopene, green tea, and ignatia are used systemically.

This article aims to provide an update on the recent advancements in the management of OLP.

Corticosteroid administered topically, intralesionally, or systemically is the management of choice for OLP, since it dampens the cell-mediated immunity. According to various researchers the combined therapy of topical and systemic steroids is effective. Topical application of corticosteroids two to four times daily is recommended to treat topical oral lesion; 0.025% clobetasol propionate, 0.1% triaminolone acetonide, and 0.05% fluocinonides are the mainly used topical agents. Prednisone is the most commonly prescribed systemic steroid. According to the patient’s need, the dosage and the form of preparations should be used cautiously to reduce side effects.

Amitriptyline is a tricyclic antidepressant, which could be used to treat lichen planus as depression is considered as one of the causative agent. Javadzadeha et al compared the mouthwash which contains ketoconazole, clobetasol, and amitriptyline with dexamethasone tablet (0.5 mg in 5 mL water), 30 nystatin drops, and 5 mL diphenhydramine syrup. The therapy was found to be effective among the patients suffering from OLP.

Amlexanox is an anti-inflammatory drug and is available in the form of a paste, which contains 5% of AX. It is very effective when used on the oral mucosal lesions and there are no significant side effects. It increases the
content of intracellular cyclic adenosine monophosphate in inflammatory cells thereby inhibiting the production and secretion of tumor necrosis factor-alpha (TNF-α), leukotrienes, and histamine. Fu et al\(^6\) compared the efficacy of 5% AX paste with 0.043% dexamethasone paste and found AX as effective as dexamethasone.

Curcuminoids are the major components of *Curcuma longa* (turmeric). It has been a part of Ayurvedic medicine for centuries in India, as it is nontoxic and has a variety of ameliorative properties including antioxidant, analgesic, anti-inflammatory, antiseptic, and anticarcinogenic activity. Various studies have shown that higher doses of curcuminoids (6000 mg/day) are effective in the management of OLP. But according to few researchers about 40% had side effects.\(^7\)

The low-intensity lasers are being used in health care studies since more than three decades. It brings about local vasodilatation thereby causing the immune cells to move into the tissue. It helps in controlling the inflammation of the oral cavity by modulating the function of mast cells. A study conducted by Elshenawy et al showed complete remission of symptoms with no associated side effects.\(^8,9\)

Purslane is a weed, which belongs to the family Portulacaceae. It consists of various vitamins like A, C, and E, omega 3 fatty acid, \(\beta\)-carotene, minerals, and melatonin. It has anti-inflammatory, antiulcerogenic, antifungal, and antioxidant properties. It is also found to be effective in case of infections, urinary, and digestive conditions. The melatonin which is present in the purslane acts by stimulating antioxidant enzymes and also as a free radical scavenger. According to various researches, melatonin and omega-3 fatty acids prevent the amelioration of malignancy. On considering its therapeutic properties, purslane can be used as an alternate therapy for patients with OLP.\(^0\)

Thalidomide is an immunomodulatory drug. It has anti-immunologic and anti-inflammatory properties. It is being used in the management of aphtous stomatitis, erythema nodosum leprosum, rheumatoid arthritis, myelodysplastic syndromes, and Crohn’s disease as it has the capability to reduce the formation of TNF-α.\(^11,12\) It is found to be effective in the management of OLP because of its various therapeutic properties, such as anti-inflammatory, anti-angiogenesis, and immunomodulatory properties. Wu et al\(^15\) compared the efficacy of 1% thalidomide paste with 0.043% dexamethasone paste and found that topical thalidomide is as effective as dexamethasone in the treatment of erosive OLP.

Lycopene is a red-colored carotenoid, which gives red color to tomatoes and several other fruits. It has a variety of therapeutic properties like inhibition of cancer cell proliferation, antioxidant activity, inducing phase II enzymes, interference with growth factor stimulation, regulation of transcription, and restoration of gap junctions.\(^14,15\) According to the study conducted by Saawarn et al,\(^16\) lycopene 8 mg/day reduces the symptoms of OLP.

Aloe vera gel is a plant which belongs to the family Liliaceae. Its therapeutic properties include antibacterial, anti-inflammatory, antifungal, antiviral, and hypoglycemic effects.\(^17,19\) It inhibits the inflammatory process either by reducing the level of TNF-α and leukocyte adhesion or it interferes with the action of arachidonic acid pathway via cyclooxygenase. A study conducted by Choohnakarn et al\(^20\) found that 70% aloe vera gel was safe and effective in the management of OLP.

Hyaluronic acid: The polymerization of N-acetylglucosamine disaccharide and glucuronic acid forms HA, which is a hygroscopic macromolecule. It mainly helps in the healing of tissue by activating and moderating the response of inflammatory cells, promoting the proliferation of cells, angiogenesis, and migration.\(^21\) A study performed by Nolan et al\(^22\) to evaluate the effectiveness of a HA gel preparation (topical) in the treatment of OLP found that topical application of HA has improved the pain scores in comparison with placebo. The frequency of application should be increased to obtain better result as its action is not long lasting.

Green tea: It consists of polyphenols, such as epicatechin-3-gallate, epicatechin, epigallocatechin-3-gallate, and epigallocatechin.\(^23\) It has chemopreventive and anti-inflammatory properties. It inhibits presentation of antigen, migration, activation, and proliferation of T-cell, and also controls other inflammatory mediators, thereby managing OLP by regulating the nonspecific and antigen-specific mechanisms concerned regarding the etiopathogenesis of OLP. It was also found that the consumption of green tea can prevent the malignant transformation of OLP.\(^24,25\) Zhang et al\(^26\) hypothesized that consumption of green tea might reduce the incidence of OLP and provide a means of harmless and economical beneficial therapy for OLP.

Ignatia: Ignatia is extracted from the *Strychnos ignatii* beans. It was considered poisonous as it contained high levels of strychnine. But in smaller doses it could be used as a laxative.\(^27\) It is considered as one of the homeopathic remedies for the treatment of depression and anxiety symptoms. Hence, it could also be used in the management of lichen planus as psychological conditions are considered as one of the causative factor.\(^28\)

Propolis: Propolis or bee glue is being used since centuries in Ayurvedic medicine. It has anti-inflammatory, antioxidant, antibacterial, antiviral, antifungal, antitumor, and immunomodulating effect. It is also considered to be nontoxic. These properties have prompted investigators to check its efficacy on OLP.
A study was done by Zyada et al.\textsuperscript{29} to assess the efficacy of topical mucoadhesive gel containing propolis in the treatment of OLP and proved that propolis showed to be a promising pharmacological agent for inhibiting epithelial cell proliferation and has anti-inflammatory effect in these OLP lesions.

**CONCLUSION**

A long time has passed since the first diagnosis of OLP and till date no treatment could completely heal the lesion. This could be because of the various immune responses and condition of the individual patient or unpredictable etiology. After a much thorough review of literature, further intensive studies and research will be mandatory for the complete cure of patients suffering from OLP.

**REFERENCES**


