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Review Article

Integrative approach in managing oral lichen planus

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ABSTRACT

Oral lichen planus (OLP) is a well-known chronic inflammatory disorder which is linked with alteration in functioning of cell-mediated immune function. It is characterised by repeated exacerbations, prolonged evolution, pain, resistant to treatment, thus affecting the quality of life of patients. The present review focuses on treatment strategies of OLP and how these methods improve the quality of life of patient. The main aim of OLP therapy is reducing the symptoms and eliminating the occurrence of mucosal related lesions, along with reduction of oral cancer risk. The common treatment modalities are laser, ultraviolet irradiation, immunomodulatory agents, corticosteroids, retinoids etc.

1. Introduction

Lichen planus (LP) is defined as a chronic inflammatory disease affecting mucous membrane and skin of squamous cell origin for unknown reasons. Lesions of LP appear in the form of violaceous, pruritic plaques and papules. These lesions are most frequently seen on the lower back, wrists, and ankles. The characteristic appearance is lattice-like white line network, which is known as Wickham striae. This network is commonly seen on these lesions but it is most commonly observed over the erosions on the buccal mucosa.[1] In most of the cases, skin lesions get cleared spontaneously within 1-2 years after preliminary appearance of the lesions. Recurrences of these lesions are commonly seen and residual skin hyperpigmentation occurs. Oral Lichen Planus (OLP) is a chronic disorder that might shows recurrence. After removing the causative medication, drug-induced LP slowly get resolved.

2. Etiology

Lichen planus is a disease which is idiopathic in origin. Pathogenesis of LP is yet not completely understood. It represents a T-cell-mediated autoimmune disorder. The commonly known etiological factors are exogenous agents like drug, virus, contact allergen etc. These agents lead to altered epidermal self-antigens, thus activating the cytotoxic CD8+ T cells. It has been found that normal self-antigens cross-react with altered self-antigens present on basal keratinocytes, that causes apoptosis and T-cell targeting.[2] For developing LP, various agents are responsible, but major etiological factor being viruses like hepatitis C virus (HCV). OLP is also associated with different contact allergies to various metals being used in dental filling materials like copper, mercury, and gold. Many drugs are also found to be associated with LP, like ACEIs, antimalarials, thiazide diuretics, quinidine, NSAIDs, tumor necrosis factor (TNF)-alpha inhibitors, beta-blockers, and gold.[3]

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3. Epidemiology

OLP is a prevalent disease, being reported in around 0.02-4% of total population. Females are more commonly affected than males in the ratio of 1.5:1. Most of the cases are seen in individuals aged between 30 to 60 years of age. Incidence of LP is rare in occurrence among children, representing only 5% of total LP cases. LP is usually not linked to racial predilection, but few researchers found an increased prevalence of LP among Arabians, Indians and African-Americans. Familial predilection is observed, revealing around 10% relatives of patients being affected from LP.[4]

4. Diagnosis

Due to overlapping histopathological and clinical characters, diagnosis of OLP remains challenging. OLP can be diagnosed by visual clinical examination without subjecting patients to biopsy. This is successful when the lesions reveal the characteristic appearance of Wickham's striae.[5] A thorough clinical evaluation and a complete case history by a team of specialists including ophthalmic surgeon, dermatologist, gastroenterologist and general physician are needed for investigating the involvement of other regions besides oral cavity. Different investigations to be done are cytology; haematological examination; and biopsy (immunofluorescence and histopathological evaluation).

4.1. Cytology

Cytological assessment includes smear examination which is mandatory in case of desquamative LP lesions. Other examination includes Tzanck test, which is a fast, simple, and inexpensive test for diagnosing the erosive lesions that is usually done with less discomfort to the patient, mainly using sample from gingiva for identification of the acantholytic cells.

4.2. Hematology

Hematological examination incorporate different investigations like; Differential leukocyte count, Total leukocyte count, Platelets, Hemoglobin, Erythrocyte sedimentation rate, Hematocrit, Total red blood cell, MCV, MCHC, MCH, Hb C Ag (hepatitis C virus), Patch test, Antibiotic drug sensitivity test, and Rheumatologic evaluation.

4.3. Biopsy

In diagnosing OLP, the histopathological assessment is the gold standard method. The characteristic pattern is waning and waxing pattern in case of recurrence and healing of the lesions. The pattern is observed microscopically and it varies in the intensity and there are variations in the types of chronic inflammatory infiltrates present in the lesion. A well-circumscribed band-like cellular infiltration zone is seen, which is located at the superficial portion of the connective tissue or superficial part of lamina propria, mainly containing the lymphocytes.

4.4. Differential Diagnosis

There should be differentiation of non-erosive OLP s type from lichenoid reactions, frictional keratosis, discoid lupus erythematosus and leukoplakia both histopathologically as well as clinically. The differential diagnosis of atrophic or erosive OLP is pemphigus vulgaris, chronic ulcerative stomatitis, lupus erythematosus, MMP, and erythematous candidiasis. Lichenoid drug reactions are usually linked with a drug intake history and show a unilateral distribution of the lesions.

5. Treatment

The first line of management of OLP lesions is conservative treatment including patient counselling and making him understand regarding the nature of this disease, along with its etiological and risk factors, its varied oral manifestations and also its recurrent behaviour. The major objective of the OLP treatment is to improve the level of stress and fear, thus expecting the reduction of the symptoms. Eliminating the causative factors that may affects the process of healing and thus determining the prognosis of the lesions are fractured or sharp teeth, severe attrition, poorly fitting dentures and decreased vertical dimension (that causes candidiasis) is required to achieve a good outcome.

5.1. Therapeutic management

Different therapeutic options are available to treat oral lichen planus. Non-erosive OLP is generally managed using topical potent corticosteroids (CS) (like 0.05% clobetasol propionate). In case of erosive OLP, intralesional injection of triamcinolone is useful. Various systemic therapies are used in case of severe refractory and erosive OLP. These therapies consists of hydroxychloroquine (HCQ), apremilast, systemic retinoids and CS.

5.1.1. Corticosteroids

It has been advocated that potent topical corticosteroids can be a well accepted first-line of treatment; but still no firm scientific evidence is available that supports this fact. Now-a-days, perilesional and topical corticosteroids administration is mainly utilized as the first-line of treatment for the erosive type of OLP. But still there is no clinical accord related to the second-line of treatment. The short-term systemic corticosteroids use is advocated to control the signs and symptoms of OLP rapidly, and even they are used to treat the persistent lesions that are not being treated using topical steroid therapy.[6]

Triamcinolone acetonide is a well-known topical corticosteroid being used as an oral suspension, adhesive paste, or lozenge for treating OLP. Betamethasone disodium phosphate and clobetasone propionate solutions are also used successfully for treating diffuse OLP, having raised chances of systemic absorption along with complications being caused by suppression of adrenal gland. Fluocinonide, betamethasone valerate, fluocinonide acetonide, clobetasol, and triamcinolone acetonide adhesive paste are also found useful in treating OLP.

On the basis of the chemical structure of the glucocorticoid hydrocortisone (cortisol), synthetic corticosteroids are manufactured. Cortisol is known to be the major representative of glucocorticoids. It influences the metabolism that involves proteins, carbohydrates and fats. It also shows immunosuppressive and anti-inflammatory effects. Now for treating OLP, preparations of topical steroid are most commonly being used in the form of gels, ointments, creams, rinsing solutions, adhesive pastes and sprays. In most of the cases, OLP lesions can be managed using high-potency topical steroid preparations, that are found to be very efficient, with low incidence of side effects as compared to the systemic corticosteroids.[7] An intralesional injection of corticosteroid gives a required therapeutic effect quickly. The presence of discomfort and pain along with the chances of atrophy development at the application site is decreasing the popularity of this method.

5.1.2. Immunosuppressants

Immunosuppressive drugs cause inhibition of the functioning and proliferation of T lymphocytes, thus decreasing the immune response of the body. For treating OLP, azathioprine, cyclosporine, pimecrolimus, and tacrolimus are used. Cyclosporine (CSA) specifically and reversibly inhibits the activity of T-lymphocyte. In lymphocytes, it gets bonded to the intracellular cyclophilin protein, thus forming a CSA–cyclophilin complex that further inhibits calcineurin. Because of its particular action, it is being used for treating the stubborn OLP cases, when used topically as an adhesive paste or in the form of mouthwash (100 mg per ml, two times daily).[8] Tacrolimus (FK-506) is a known macrolide immunosuppressant that have a greater capacity for getting penetrated through the mucosa and it is around 10 to 100 times more potent. For treating OLP, it is used topically twice a day in a concentration of 0.1% to the affected area.

5.1.3. Retinoids

Retinoids are vitamin A (rethionol) metabolites and these are either used systemically or topically for treating OLP. They are utilized for the normal growth and proliferation of epithelial cells in our body. In case of its deficiency, epithelial cells present in the oral cavity show keratinisation. The most frequently used topical retinoids are isotretinoin, tretinoin, and fenretinide in the concentration of 0.1% and in the gel form.[9]

5.1.4. Lycopene

Lycopene is a red-colored, fat-soluble carotenoid and exerts its antioxidant activity by physical and chemical quenching of free radicals. It is used in the management of various systemic and few oral diseases including cancer and precancerous lesions. lycopene deficiency has been reported in the patients with erosive or atrophic OLP, and lycopene supplementation may have shown positive results.[10]

5.1.5. Other drugs

Dapsone reveals promising results in case of treatment of the erosive form of OLP. Photochemotherapy or PUVA is also linked with an oncogenic potential, thus it is advised for treating the more severe OLP forms that do not show response to the conventional therapy.[11] Tetracyclines are also being used for treating OLP; but their affectivity is limited to the cases involving the gingival lesions of OLP. For managing the erosive OLP, topical application of beta and alpha -interferon has also been advised.

Levamisole is also advocated to be used as an immunomodulator for treating OLP. Topical mesalazine is used for managing the symptomatic OLP showing similar effectivity as topical clobetasol. Phenytoin, topical hyaluronic (HA) acid, Vitamin D, selenium, curcumin and aloe vera are also advocated to be used in treating OLP.[11] Monoclonal antibody efalizumab is an impending treatment modality for erosive OLP and the ulcerative cutaneous lesions. Sulodexide is a drug having a low molecular weight, which is made up of heparin chains (80%) and dermatan sulfate (20%). Because of its protective effect on the endothelium, it helps to repair the cellular damage. It has a potent role for controlling and treating the erosive OLP.

Apremilast decreases the release of IFN-gamma, TNF-alpha, IL-2, IL-8, IL-5, and IL-12, that has contribution in the pathogenesis of OLP.[3] Azathioprine (AZA) has been successfully being used for treating patients with erosive OLP. Different biological therapies are being used in cases suffering with refractory OLP. These therapies include anti-TNF-alpha, anti-CD2, anti-IL17, anti-IL2, anti-IL23 and anti-IL12/23 drugs[3] Janus kinases inhibitors and Hydroxychloroquine are reported to be used in OLP. Dapsone is also being used in few cases of OLP, but is not recommended as a routine therapy.[3]

5.2. Reflexotherapy

Reflexotherapy increase the chances of epithelization of erosive lesions as well as promote healing of the ulcerations found on the buccal mucosa. It highlights the efficient analgesic effect of this applied therapy.[12]

5.3. Surgical management

Cryosurgery and Surgical excision are also successfully utilized for managing the cases of erosive OLP when such lesions are resistant to most of the therapeutic options. After removal of lesions using cryosurgery, rate of relapse is common in occurrence. Sometimes new lesions appear in the healing wounds and on the scars, which are associated with stronger symptoms. Free gingival and soft tissue are also being used for managing the localized lesions of erosive OLP.[13]

5.4. Photodynamic therapy (PDT)

Photodynamic therapy (PDT) is a substitute management option for OLP. It works on the basis of the interaction between photosensitizer (PS) administration and a light source. This interaction leads to the release of free radicals thus causing cellular damage.[14]

5.5. Low-level laser therapy (LLLT)

Low-level laser therapy (LLLT) is also one of the treatment option for OLP. Laser is a non-invasive and non-pharmacological alternative treatment option for managing OLP. Low-level laser (LLL) consists of different light sources like ruby (694 nm), helium neon (633 nm), and argon (488 and 514 nm). Ultraviolet, Helium–neon, and diode lasers having varied irradiation times, doses, output powers, and the number of sessions are used for treating OLP lesions. Photobiomodulation (PBM) (at wavelength of 400–1.100 nm) produces a beneficial effect on metabolism of cell without damaging the cells or affecting the basal temperature of the body.

6. Conclusion

In spite of a thorough understanding of the immunopathogenic OLP mechanism, the reason that primarily activates the lesion formation still remains unidentified. Thus, currently there is no idyllic therapeutic agent available for treating OLP. Various treatment modalities convince the safety, and effectiveness of the treatment only partially, thus justifying the need of a continuous search of more effective drugs, new preparations and methods of treating OLP.

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None.

8. Conflict of Interest

None.

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