Oral Infection by *Lichen Planus*: Types, Relevance, and Significance: A Review

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Abstract
Lichen planus is a chronic inflammatory condition that affects the skin. It is referred to as oral lichen planus (OLP) when it develops inside the mouth. The condition may only occur in the mouth or also affect other body parts at the same time. It can also occur in the genitals, nails, and scalp. The condition is marked by the onset of a non-infectious, itchy rash. The rash is often small with an irregular shape. It also has a flat top and appears as pink or purple bumps. OLP affects about 1% of the population. OLP is sometimes triggered by the body's reaction to metals placed in the mouth. Examples are dental fillings and metal braces. There have also been reports of the disorder occurring due to mouth mannerisms. Examples are biting the cheeks or tongue. Clinically, six types of OLP, namely reticular, popular, plaque-like, atrophic/erosive, ulcerative, and bullous types, can be identified. OLP more commonly affects the buccal mucosa, tongue, and gingiva. It is important to note that OLP is not an infection. It is also not contagious. It is not passed on from person to person. It is also not linked to nutrition or nutritional deficiency. However, eating certain fruits, tomato-based products, and spicy food has been found to make the symptoms worse. OLP is more common in women than men. It is often diagnosed in patients aged 40 and above. However, it can also affect children and young adults.

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1. Introduction

Oral infections have become one of the most common and critical diseases of the oral mucosa and progression of the oral cavity these days. Lichen planus is a chronic inflammatory autoimmune disease of the oral and cutaneous mucosa. It has different forms, and the most usually occurring of them is an erosive and red variety or a white striae-like pattern. This disease lasts for a long time and has a tendency for malignant transformation. This article is aimed at providing promising information regarding the variations that lichen planus has. Since the title reflects the infection, the infection discourses have also been discussed. Our attempt is to provide a full view of this important topic. It is appraised that lichen planus possesses such clinical and histopathological significance in daily dental practice. (Jana *et al*., 2021 and Abe *et al*., 2022) [1, 2]. Our immune system can give a variety of immune responses against self-antigens. This can result in mucosal skin coalescing aberrations composite. Lichen planus is one of the prevalent conditions falling under this umbrella. It is a T-cell-mediated mucocutaneous disease with localized or generalized involvement of non-scalp cuticular zones. These cuticular lesions can be categorized as dyschromic lichen planus, lichen planopilaris, hypertrophic lichen planus, classic confluence lichen planus, mucosal variant, and lichen planus actinicus. It is alleged to include oral, genitalia, skin, scalp, and nail complex in the reversible phase of the derma-aggregate entity. Especially in the localized subset of mucocutaneous lichen planus, it is very imperative to confine the contagious cumulative human papillomaviruses to the erroneous high-irradiation therapy and chemotherapy-modulated immune compromised restraint. (Vičić *et al*., 2023 and Louisy *et al*., 2024) [3, 4]

1.1. Overview of Lichen Planus

Lichen planus is a T-cell-mediated mucocutaneous disease that often has a chronic course in the absence of suppression of T cells or removal of the antigen. Lichen planus has six different clinical types: cutaneous, oral, genital, nail, scalp, and hypertrophic, and several different morphologic presentations. Because the skin is visible to several clinicians, the dermatologist is most familiar with cutaneous lichen planus. Oral lichen planus has become a condition of major interest within the last 5 years. (González-Moles *et al*., 2021 and Liu *et al*., 2020) [5, 6]. Oral infection by lichen planus has not only true implications descriptively, persona-socially, and for therapy but has also been employed as the prototype of an autoimmune disease. Such a prototype has experimental significance because treatment following the presence of a large body of literature on oral lichen planus can act as the first step in the establishment of a new therapeutic regimen. Thus the modern concept of the pathogenesis, including the definition of autoimmunity in oral lichen planus and its relevance, holds promise in the further development of a therapeutic strategy for this disease. However, although it has been assessed and re-evaluated many times, the etiology of oral lichen planus remains unclear. Thus any description of oral LP is to some extent provisional. With the increasing awareness of this condition, it is currently categorized as an autoimmune disease, although the definitive proof would be the identification of the responsible auto-antigen. (De *et al*.,2024 and Osipowicz *et al*., 2024) [9].

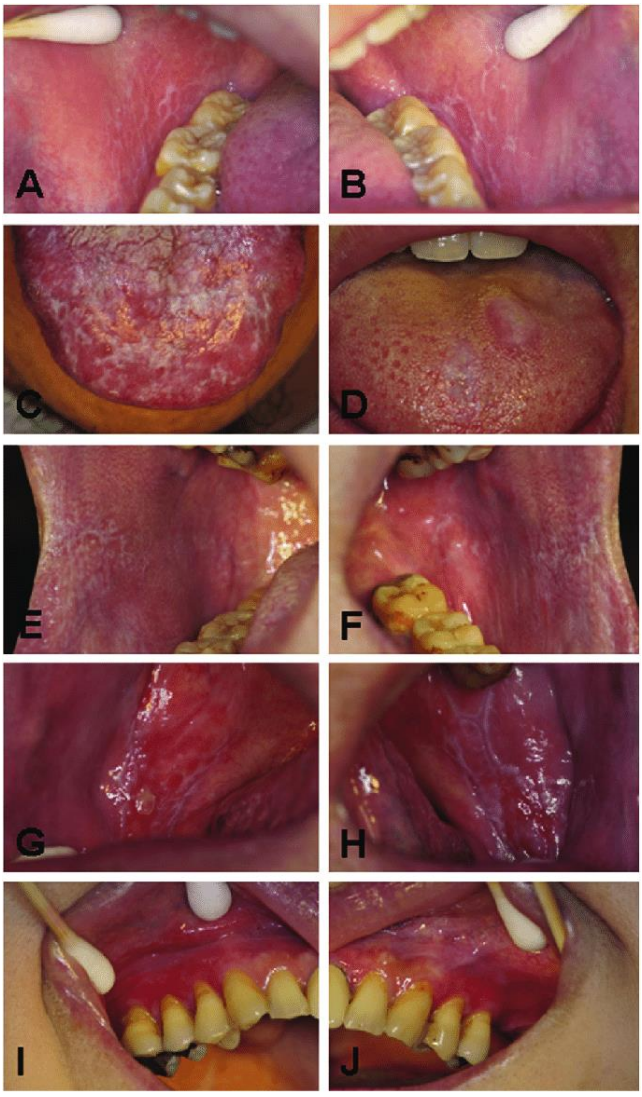
1.2. Scope of the Review

The review will start with an introduction to oral lichen planus and provide a brief overview of the clinical presentation of the condition. A more detailed presentation of the disease/condition will be provided next, covering pathogenesis, prevalence, and clinical manifestation. The fundamental issues related to clinical clonal conversion, dysplasia, malignant and invasive transformation, and currently available diagnostic tools for the early diagnosis or prediction of the malignant transformation of oral lichen planus will be discussed. The role of immunogenetic background and serum and salivary antibodies related to the diagnosis and the malignant transformation of oral lichen planus has been depicted. However, studies justify a brief report on the relevance and significance of these possibilities. Whether to include the relevant findings or not must be elucidated. (Ghazi & Khorasan chi, 2021 and Idrees *et al*., 2021) [10, 11].

Since the literature review will be confined to the publications found in Scopus, PubMed/NCBI, and Web of Science, along with the gray literature search (i.e., government publications), as well as the search using Google Scholar and cross-references to include more studies for review, publication search will be done by using the subject heading terms "oral lichen planus," "OSF," "leukoplakia," and "erythroplakia." General searches such as "oral lichen planus, clonal conversion," "oral lichen planus, dysplasia, and clonal conversion," and "Oral lichen planus, Immunogenetics" will be used to incorporate as many relevant publications as possible for consideration in this review. (Pranckutė, 2021 and Singh *et al*., 2021) [12, 13].

2. Types of Oral Lichen Planus

There are several forms presented by oral lichen planus. Reticular oral lichen planus, the most common symptom, is characterized by Wickham striae with fine, interlacing keratosis, located mainly on the buccal mucosa in a bilateral and almost symmetrical manner. They may also appear as a network of striae (with annular plaques) or isolated white striae on the alveolar ridge, dorsum of the tongue, palate, and labial mucosa. Pain is infrequent, with a prevalence of 3.4%. Patients with oral lichen planus do not report ganglia, even when the clinical course can be prolonged and recurrent, with interphases of remission and exacerbation. (Sree and Vadivel 2020 and Osipoff *et al*. 2020) [14, 15]. Erosive oral lichen planus lesions are typically located contralaterally symmetrically, and the buccal mucosa, dorsum of the tongue, and gums are affected, although blisters may also be seen. It is painful and can release serous and hemorrhagic exudate. Desquamative gingivitis is presented by 23% of patients with erosive oral lichen planus. This problem can also affect the genital areas. Erosive oral lichen planus has a higher risk of developing squamous cell carcinoma and is also a sign of systemic lichen planus, which should be verified. Oral Lichen Planus mucous reticular has a white filamentous reticulum on the buccal mucosa and palate, but no papules are obvious. Stomatodynia is moderately prevalent, at around 34%. Intraoral itching is more common and affects approximately two-thirds of these patients. (Jurczyszyn *et al*. 2021 and Bobrowski *et al*., 2021) [16].



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Six clinical types of oral lichen planus (OLP) on the oral mucosa of different patients. (A and B) A mixed reticular and erosive type of OLP on the bilateral posterior buccal mucose of the same patient. (C) The reticular type of OLP is on the anterior dorsal surface of the tongue. (D) The plaque-like type of OLP is on the anterior dorsal surface of the tongue. (E and F) A mixed popular and reticular type of OLP on the bilateral anterior buccal mucose of the same patient. (G and H) The atrophic/erosive type of OLP on the bilateral posterior buccal mucose of the same patient. The lesion on the right buccal mucosa is also an ulcerative type of OLP. (I and J) The desquamative gingivitis is caused by OLP on the bilateral maxillary posterior buccal gingivae of the same patient.

2.1. Reticular Lichen Planus

Reticular lichen planus (RLF) is the most common oral form of the disease. When it comes to its description, the classic aspect will show a fine, whitish, asymptomatic line known as "Wickham striae" connecting isolated papules that measure a few millimeters at some location on the oral mucosa. The isolated papules will generally present a rounded or flat surface and will measure up to 3mm. The favored location is the bilateral buccal mucosa, in the premolar region of the inner face of the jaws, followed by other sites on the cheeks and gums. While in Fordyce granules, reticulate small points of white color may be seen through a magnifying glass. During clinical examination, rolling the mucosa between the index finger and the thumb or stretching it isolates the striae and eases their visualization. (Khabibova, 2021 and Halonen, 2020) [18]. During the biopsy, orthokeratosis, with or without a granular layer, acanthosis, and the presence of a band-like chronic inflammatory infiltrate in the superficial corium with or without hypergranulosis and/or lichenoid necrobiosis are the most typical histological findings. The location of LFO is variable, and the only difference from Wickham's stomatitis is its clinical expression. When it comes to epidemiology, RLF is the most common oral form of LP, in particular, the triangular or tentacular papular form. This type of presentation very frequently coexists with the cutaneous variant. It is a rare condition in the form of the reticular papular one. It can affect a patient of any age and gender. Considering the observation of isolated papules with characteristics analyzable by adjournment or biopsy, RLF is also under-diagnosed. (Tarquinii *et al*., 2021 and Sartori *et al*., 2022) [21].

2.2. Erosive Lichen Planus

Erosive LP was responsible for the eruption of ALEs in 1.52% of their sample. Hadjinicolaou *et al*. found erosive LP to be the underlying cause of ALE in 7% of the patients included in their study. Gupta *et al*. concluded that 47.22% of patients with erosive LP may develop dysplasia, while the saliva of patients with this lesion presents multi-elemental alterations using synchrotron X-ray microfluorescence and microabsorption spectroscopy. In the last ten years, only 25 papers would describe the erosive/ulcerative forms of lichen planus, among RADRDs, underscoring its low incidence, especially when compared to the non-inflammatory variants, which are the majority, accounting for 119 articles, or even to the reticular forms, the focus of 74 papers, or the erosive and reticular combined that present 113 references. The data analysis of three national and international registries revealed a predominant female and chronic, indolent, and recurrent course of erosive LP. EO could affect any epithelial structure; however, the gingiva and buccal mucosa are the main sites, usually occurring from the fifth decade of life. The lesions are painful, ulcerated, and resistant to various treatments. Microscopically, hydropic degeneration and various combinations of stimulated mononuclear infiltrate and lichenoid features can be observed. It may be an incidental finding of chronic graft versus host disease, and many LP-related drugs can be associated, like PD-1 inhibitors and methotrexate. (Wu *et al*., 2022 and Iles *et al*., 2021) [22, 23].

Ravelli *et al*., more than 20 years ago, showed that two patients with ALE had erosive LP. In a 2021 review of the differential diagnosis of erosive oral lichen planus (EO), the authors did not rank EO among OMF. However, this review has not concluded on the possible association between EO and different grades of oral lichen planus malignancy (PLY). ALEC's new features may be generalized or exhibit unilateralism and exacerbation of a preexisting LPP. Notably, about 50% of the patients may experience chronic pain. Characteristically, in our series, pain usually does not correspond to the clinical extension of the lesions, and some BM stigmata, such as MMN, are devoid of ALE. Our previous study on ALEC reported up to 25% of patients who were on long-term steroids due to severe oromucosal symptoms. Mallia and Ungparenargon showed emotional and psychiatric impairment after decades of erosive OM lichen. Once the exclusion diagnostic procedures were performed, no ALEC preventive and management guidelines are currently available. Recent ARLS/less than 5-year-long LCP publications have signified palindromic neurological or midbrain asthenia (PALNA), whereas OT/LCP patients refer to our drug holiday and PEM tips. EO of the gyri is more frequent than OC and LCT/MGA alternatives has a longer duration, is associated with LPP, and BM stenosis, and, albeit being extremely rare, anti-Hu-induced LE is more frequent in females compared with the large series of SCLC-associated ALE. (Reiser & Girschick, 2024 and Mirfarsi *et al*., 2023) [24, 25].

2.3. Bullous Lichen Planus

As opposed to classical oral erosive lichen planus, bullous lichen planus patients tend to be middle-aged women more frequently, with over four times the prevalence. Bullous lichen planus occurs in 15% of patients with oral lichen planus of any type and may also occur diagnostically within Leser-Trélat syndrome, an uncommon, symptomatic, complex genetic disorder. Other associated conditions, such as Cushing syndrome, glucocorticoid use, and spironolactone intake, have also been documented. Epithelial antigens have been linked to cell-mediated immunity responses resulting in subepithelial blistering, as mentioned earlier to describe the pathophysiology of oral lichen planus and cutaneous lichen planus. A profile of distinct interleukins, growth factors, chemokines, and apoptotic inhibitors have been reported in the superficial areas of skin lesions. It exacerbates post-treatment inflammation by increasing the production of NF-kappaB, COX-2, and p53 via caspase signaling and keratinocytes by enhancing Bcl-2 and inhibiting the expression of matrix metalloproteinase 9. Nonetheless, no reports have been identified to confirm genetic stability, comorbidities, autoimmune mechanisms, lichen planus genotypes, and therapeutic response disparities in BPOLP (González-*et al*., 2023, Gururaj *et al*., 2021 and Sciuca *et al*., 2022) [26, 27, 28]. In sum, and light of the information presented by this study, it may be critical to bear in mind that patients

suffering from bullous lichen planus are done so in tandem with oral lichen planus and to pay attention to related conditions that may affect them. Doing so will contribute to enhancing our understanding of these somewhat distinct types of oral lichen planus. (Sciuca *et al*., 2022 and Radochová *et al*., 2021) [28, 29].

3. Relevance of Oral Lichen Planus

As the oral cavity is a field of presentation or development of many forms of lichen planus, the main types of this affection will be presented, emphasizing the epidemiologic features, the level of clinical relevance, and its importance for the clinician to diagnose. For example, its relevancy stands in the fact that white oral lichen planus is much more frequently developed in smoked patients. The symptoms of all forms of lichen near the teeth or oral mucosa encompass the conical keratotic papules, localization, and aspect. The history and exams describe the presenting general characteristics of the lesions, such as the presence of white striations of the buccal mucosa at posterior teeth regions and in edentulous patients. The oral cavity's vestibular presentation (as lower or upper results) with simultaneous descriptions of other different mucosae provenience, such as bladder, skin, vagina, or paresis/intolerance of streptococci antibiotics. This classification will help oral clinicians to estimate better the development and the clinical evolution of the patients suffering from these epithelial diseases. (González-Moles *et al*., 2021, Radochová *et al*,. 2021 and Elenbaas *et al*., 2022) [5, 29, 31].

Due to the development of lichen planus in many different regions of the oral cavity, close to the teeth or oral mucosa, its presenting forms are also very variable. The prevalence of oral planus lesions in various studies is between 1-2% of the general population, reaching 3.2 in 100 old people, and is more frequent in women than in men. Major symptoms are cutaneous, psychic, and hepatic diseases, but their existence in the oral cavity is directly connected with vitamin deficiency, periodontal disease, as well as smoking. Some authors posit that LP (especially BhLP) predominates in females, with a 2:1 woman-to-man ratio. However, others assert that sex predilection is relatively minor. (Li *et al*, 2020, González-Moles *et al*., 2021 and Radwan-Oczko *et al*., 2022).

3.1. Epidemiology

Oral lichen planus (OLP) is a chronic inflammatory disorder. The disease is not well understood. The duration of the disease is known to vary widely, from a period of 6 months to more than 3 years. The worldwide prevalence of LP/lichenoid reactions (LR) is not known, but in general, the occurrence of oral lesions varies from 6.5% in Sudan, 7.6% in Czechoslovakia, 11.8% in the United Kingdom, to 25% in Greece. It is difficult to determine the real prevalence and distribution of OLP to a greater extent. Moreover, the lack of large-scale studies and non-standardized diagnostic criteria might add to the variable data. A higher incidence was observed in adult patients over 40 years of age. Furthermore, females are said to be more affected, with a sex ratio of 3:2. Some of the specific associations that are recognized are EG, Psoriasis, Celiac Sprue, myasthenia gravis, lichen, reticular Langerhans cell histiocytosis, hepatitis C virus (HCV) infection, and OLP in females, which suggest the role of these entities and, possibly, individual T-cells (Autoimmune). The role of T-cells in the etiology of OLP has been widely accepted in the literature. (Li *et al*.,2020, Wiriyakijja *et al*.,2021 and Vinay *et al*.,2020).

OLP is a common chronic mucosal disease, which points towards the possibility of it having significant economic implications on patients, particularly when taking into account the vast population affected each year. Input from several epidemiologically-designed studies, however, has expressed low awareness of OLP among general dentists. One of the primary reasons includes the phenomenon that many of the affected patients with OLP may remain either completely or partially asymptomatic, and the disease usually remains neglected if a closer and systemic clinical examination is not being performed. The chronic nature of OLP, along with heterogeneous clinical and histopathological features, significantly impacts both the quality of life and results in increased annual healthcare costs made by affected patients. (Amarasinghe *et al*.,2022 and Yiemstan *et al*., 2020).

3.2. Clinical Presentation

Considering the clinical presentation, any site within the oral mucosa can be affected as well as any combination of surfaces. The most frequently affected site is the buccal mucosa (40.9%), followed by the tongue (23.1%), gingival-buccal sulcus (20.0%), and lips (10.5%). Clinically, atrophic-erosive forms are the most frequent (58.4%), as reported in a study analyzing data from 596 OLP patients. The typical clinical presentation is a lace-like white reticular pattern with or without streaks or plaques, which can be crossed by atrophic or ulcerative areas. Papules or vesicles may still be present. Erosions can be quite painful, though the most striking symptoms for the patients are the burning sensations or stinging/itching sensations. The most common findings are radiographic features of vertical dissolution of the mandibular cortex in the affected sites. (González-Moles *et al*.,2021 and Della *et al*.,2021).The symptoms of OLP greatly vary among patients and depend on the histopathological type, the site of the lesion, and the stage of the disease. The reticular, atrophic-erosive, and mixed/bullous patterns of OLP are often mixed within the affected areas of the oral cavity. White keratotic striae in the oral mucosa are a specific finding of OLP, although other conditions (physiological, potential or confirmed malignancy) can present (pseudo)leukoplakic striae, which are difficult to differentiate from OLP unless the correct and adequate biopsy can be performed. Contours can be multiform according to the superimposed atrophic or erosive areas mixed with the reticular pattern. During OLP, a metastable period of static atrophic lesions may occur with occasional pale white cobweb-like hyperkeratotic areas. (Gururaj *et al*.,2021and Manfredini *et al*.,2021).

4. Significance of Oral Lichen Planus

Oral lichen planus can often be associated with systemic diseases. Although several conflicting epidemiology studies have reported a possible association between lichen planus and chronic hepatitis and various autoimmune diseases, the weight of evidence still does not demonstrate a statistically significant association. Of these, psoriasis, autoimmune thyroiditis, and alopecia are the most commonly found. The possible association with diabetes mellitus is particularly important in the adult population. A diagnostic delay would also explain the different percentages of liver disease association. Patients with lichen planus of the oral mucous

membranes can suffer from considerable problems of food intolerance. Oral lichen planus can be severe or erosive, which can also lead to adhesions of the oral cavity and badly compromise both the quality of life and nutrition. Consequently, since these diseases are often diagnosed later in people who do not frequently visit the doctor, they are already found in the later stages. Besides glucose plasma assessment, the search for anti-TPO antibodies in the blood would facilitate early diagnosis. (Elenbaas *et al*., 2022 and Lucchese *et al*., 2022) [31, 39].

Oral lichen planus, with at least 21 differential diagnoses, is a multifactorial disease. Once the diagnosis is made, in addition to the patient's history, it is advisable to perform patch tests while, if positive, they can direct experiences towards sensitization by dental materials. Systemic therapies are particularly useful in atrophic cases. Bivariate or multivariate association measures cannot be calculated. In conclusion, we present a potential case of the Dx group: lichen planus - desquamative gingivitis, to underline the difficulties of making a correct diagnosis. The association could be masked by the existence of a chronic autoimmune disease. This factor often depends on a visit to specialized centers with specific diagnostic skills supplemented by a specific therapeutic approach already established for oral lichen planus, although it is a difficult disease to treat. (Louisy *et al*., 2024 and Elenbaas *et al*., 2022) [4, 31].

4.1. Association with Systemic Diseases

An extensive literature search found an association with systemic diseases in 38% of published series worldwide. More specifically, a significant association of OLP and oral squamous cell carcinoma is reported. Most patients are diagnosed with oral lichen planus (OLP or OLP alone) alopecia. Lichen planus is also often found in patients with hepatitis C. In terms of comorbidities, systemic lupus erythematosus and non-erupting lichen planus are most often linked to lichen planus. There is no clear explanation for the prevalence of various biopsy types in the studies, which shows that it may vary across different populations. Previous studies show no specific correlation between OLP and liver cancer but explain the high prevalence of hepatitis C infection. More research is needed to show if OLP is an inexpensive diagnostic tool for indicating the presence of hepatitis C in a specific population, especially if it affects people with severe forms of OLP. (González-Moles *et al*., 2021 and Li *et al*., 2020) [5, 32]. When comparing biopsy rates, apparently non-erosive bile formation is often present. In particular, people who have had jaundice for more than a year before abdominal eruptions are usually associated with HEP C. There is some evidence to support the reduced prevalence of some types of oral lichen planus in patients with the hepatitis C virus. A type of hepatic lichen planus, which is a fragmented version of the oral cavity lichen planus at a level supplied by the hepatitis C virus, may impair the function of the biliary epithelium, and this patient may cause severe biliary kamenalnezy or cancer changes. In support of these data, one study found that HLA-DR6 HLA-DR13 had increased susceptibility to HCV-related OLP. Also, the HLA-DR6 gene had a significant relationship. Since this association was found and the frequency of antihistone2 had increased, it may be concluded, subsequent to other diseases, that the immune response is the primary mechanism of Lichen Planus liver injury. (Scelza *et al*., 2022 and Pitak-Arnnop *et al*., 2022) [40, 41].

4.2. Diagnostic Challenges

4.2.1. Leukoplakia and Lichenoid Lesions: The potential for transformation of OLP into SCC has always been a topic of concern and is thus occurring in continuous debate, although the data supporting this risk are scattered and sometimes contradictory. Importantly, indeed, the presence of epithelial dysplasia on one specimen at biopsy (indicative of a reaction to chronic inflammation, regardless of the etiological factor that sustains it) does not exclude the presence of concomitant LP on another area accessible to biopsy; for this reason, in the event of one dysplastic oral mucosal lesion clinically and/or morphologically attributable to OLP, the rigorous histological evaluation of a subsequent biopsy should exclude the possibility of a double location of LP next to a focal invasion of SCC. The main differential diagnosis of OLP is, however, with other reactive and potentially premalignant oral white lesions that indeed can be assumed to arise as a reaction to an accumulation of damage due to physical-mechanical agents, and/or tobacco smoke, alcohol, and sometimes betel quid (Table 8). Upon close reasoned questioning, it is usually possible to recognize an anatomical site of presentation (trauma appears related to location more than aspect), an onset related to a change to habits and/or drug therapy, an excellent response to discontinuation of etiological agents and/or restoration of nutritional and physiological deficiencies, as well as the negligible potential for SCC transformation. (Ghazi & Khorasanchi, 2021 and Roberts *et al*. 2024) [10, 42]. 4.2.2. Keratinizing Dysplastic Lesions. Sometimes further diagnostic assessment is required for specimens and clinical cases where the unique and characteristic histopathological findings of OLP (epithelium that becomes thinned and parakeratotic, occasionally displaying elongated, serrated, and jagged rete pegs, generally hypergranulosum dyskeratosis, band-like T cells infiltrate and subepithelial sclerotic fibrosis) are not present ("negative LP"). The diffuse presence of dysplastic keratinocytes (scattered throughout the epithelium, rather than generally confined to the superficial and/or basal layers) is the typical finding of oral verruciform (warty) SCCs and indicates for this reason the presentation of a DNS. Conversely, the suggestion of numerous studies is to consider a rather close-longitudinal follow-up of the cases of atrophic-erosive OLP in "negative LP" presenting only cellular and stromal atypia (not confined in the epithelium) in order to exclude the uniqueness of radical intervention (Modak & Kulkarni, 2024, Jenkins & Mills, 2021 and Mustafa *et al*., 2021) [43, 44, 45].

5. Conclusion

Though already a number of reviews have been published focusing on oral lichen planus or lichen planus associated with different mucous membranes and extraoral sites, we leaned towards an attempt to understand the underpinnings at the luminal aspect of the mucocutaneous barrier provided by the oral cavity. The "surface molecule" induced cytotoxic attack upon the membrane of the basal cells may initiate lichen planus through activation of the immunostimulatory factors possibly NFκB-TNFα signaling cascade. This would appear to be important in the context of assessing the therapeutic strategies that are so diverse in proposing modes

of addressing the root cause of lichen planus. There is a need to extend the therapeutic strategies in offering a plan that both alleviates the symptoms and addresses the root cause without replacing them with generic methods. The different types of oral lichen planus have their own relevance and it appears unusual to attempt homogenizing strategies in therapeutic decision-making as evidenced by very little evidence reported in the systematic reviews and meta-analyses for different ways of addressing the lichen planus irrespective of their site, extent and clinical manifestations, at least in practice which we are aware of. The significance lies in taking into consideration the different types of lichen planus in future research with a large sample size for both clinical and arecoline-induced lichen planus for safe and effective therapeutic planning with "regional variation" as an important quota for scientific relevancy. Ref 26 has discussed the spectrum of molecules relevant to various types of lichen planus.

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