Oral Lichen Planus & Its Possible Correlations with Thyroid Disorders

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Abstract:

Oral lichen planus is a chronic inflammatory disease of immune origin which can affect the skin, oral mucosa, and other mucous membranes. The etiopathogenesis has not been completely revealed. It has been observed that OLP affects from 0.1 to about 4% of individuals, occurring mostly in middle-aged adults, with a female predominance. The relationship between the thyroidism and oral lichen planus (OLP) remains a controversial subject for clinicians. Many studies aimed at studying the association between thyroid disorder and OLP has been conducted over the years. Geographical variations have been shown to be a major factor influencing this association. In the present review article, an effort was made to find out any possible correlation with the thyroid disorders among the patients diagnosed for OLP.

Keywords: Oral Lichen Planus; Correlation; Thyroid disorders

Introduction

Oral lichen planus (OLP) is a member of the family of oral lichenoid reactions (OLR). The term lichen planus is derived from the Greek word *leikhēn*, which means "what eats around itself", and the Latin word *planus*, which denotes "flat, level". The word *lichen* was probably coined by Theophrastus in the 4th century BC in order to describe a superficial growth on the bark of olive trees, but it was not until early 17th century when the term was recoined in the botany field. The current definition of *lichen* is "a simple slow-growing plant which typically forms a low crust-like, leaf-like, or branching growth on rocks, walls, and trees" (Oxford Dictionaries).

Oral lichen planus is a chronic inflammatory disease of immune origin which can affect the skin, oral mucosa, and other mucous membranes. The etiopathogenesis has not been completely disclosed and thought to arise as a result of an immune response – mainly by CD8+ lymphocytes–to antigens on lesional keratinocytes (1-2).

The first to describe and name lichen planus in a medical context was the dermatologist Sir William James Erasmus Wilson (Wilson, 1869). He characterized the disease as "an eruption of pimples remarkable for their color, their figure, their structure, their habits of isolated and aggregated development". Although Wilson recorded the coexistence of oral lesions in some of his patients with lichen planus, it was Thibierge (1885) who published the initial clinical report on OLP. Later, Louis-Frédéric Wickham further characterized the lesions adding "stries et punctuations grisatres" (greyish striae and dots) to the previously described features (Wickham, 1895). This remarkable finding, which later received the name of Wickham's striae, still represents the cornerstone in the clinical diagnosis of lichen planus. Finally, Dubreuilh (1906) was the first to describe the histopathology of an OLP lesion (3-4).

WHO Clinical Definition of OLP

Clinical criteria:

1. Presence of bilateral lesions
2. Presence of a network of a slightly raised grayish white striae (reticular form)
3. Erosive, atrophic, bullous or plaque-like lesions (accepted as subtypes only in the presence of reticular lesions in some part of oral mucosa).

There is an increase in pain and erythematous or ulcerated areas and during the exacerbation phase (5). This phase is also associated with periods of anxiety, psychological stress, and mechanical trauma (Koebner phenomenon). Chronic low-intensity irritation due to the presence of plaque or dental calculus may also increase the severity of gingival LP and is considered Koebner phenomenon, other factors such as the mechanical trauma of odontological procedures, friction of sharp points, rough dental restorations, heat and cigarette irritants, and oral habits like chewing gum (6,7).

The clinical presentation of OLP ranges from mild, painless white keratotic lesions to painful erosions and ulcerations (8). The most common affected site is buccal mucosa, usually bilateral. Clinically, OLP maybe occur in 6 clinical variants as reticular, papular, plaque-like, erosive, atrophic and bullous as classified by Andreasen (9).

The reticular variant of OLP is the most recognized form; encompass white lesions, which clinically appear as a network of connecting and overlapping lines, papules or plaques. Although clinical presentation in certain patients may be an impressive array of diffuse and widespread reticulated lesions, they are usually asymptomatic and often, are unaware of the presence of these lesions. A significant degree of discomfort is associated with the erythematous and erosive OLP lesions. The site, size and a number of ulcerations is variable; rarely, bulla may be observed in the erosive form as they rupture easily (10). In the case of erosive lesions, the remission is not spontaneous and as such due to the similarity in clinical features it may lead to confusion with other autoimmune mucosal, vesiculo-erosive diseases. The most frequent intraoral site of involvement is the posterior part of buccal mucosa followed by the tongue, gingiva, labial mucosa, and vermilion of the lower lip (7, 11, and 12).

LP is a relatively common disorder, estimated to affect 0.5- 2.0% of the general population, occurring mostly in middle-aged adults, with a female predominance at a ratio of approximately 2:1 (13-14). It has been found that, approximately, 15% of the patients with OLP develop cutaneous lesions and genital lesions have been found in exist in 20% of the patients diagnosed with OLP (15-16) One of the most important complications concerning the progression and prognosis of OLP is the development of oral squamous cell carcinoma with a frequency of malignant transformation 0.4-5.3% (17) which led the World Health Organization (WHO) to classify OLP as a potentially malignant disorder (18). Apart from being more common than the cutaneous form, OLP tends to be more persistent and more resistant to treatment.

To evaluate the systemic association of OLP, many studies have been conducted in the past. Association of OLP and hepatitis C virus (HCV) in southern Europe and in Asia has also been reported in literature. The presence of HCV-specific T-cells in the oral mucosa of patients with chronic hepatitis C and OLP has also been found. Although OLP patients do not appear to have an increased risk of diabetes, diabetics who develop OLP have an increased frequency of atrophic-erosive lesions and a greater proportion of lesions on the tongue. In the recent past, many other associations have been reported especially dyslipidemia and glucose metabolism disturbance.

The relationship between the thyroidism and oral lichen planus (OLP) remains a controversial subject for clinicians. Many studies aimed at studying the association between thyroid disorder and OLP has been conducted over the years. Geographical variations have been shown to be a major factor influencing this association.

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made to find out any possible correlation with the thyroid disorders among the patients diagnosed for OLP.

Thyroid Disorder And OLP:

A high frequency of circulating anti-nuclear antibodies (ANA), anti-thyroglobulin antibodies (TGA) and anti-thyroid microsomal autoantibodies (TMA) has been reported in OLP patients. These findings suggest a possible association between autoimmune disease, including thyroid disorders, and OLP.[15]

It is known that autoantibodies against thyroid gland antigenic components such as thyroid peroxidase (TPO) and thyroglobulin (TG) can induce epithelial cell damage and that these autoantibodies are closely linked to Hashimoto's thyroiditis and Graves' disease.

People with an autoimmune thyroid condition such as Graves' disease and Hashimoto's Thyroiditis are more likely to develop other autoimmune conditions. One of these conditions is known as lichen planus. Thyroid disease has been mentioned to have a possible relation to the development of oral lichen planus (OLP).

Numerous studies have shown a correlation between lichen planus and autoimmune thyroid conditions. One small study identified different dermatologic conditions associated with thyroid disease, and showed that lichen planus was the second most common condition, right after alopecia areata (19). Another study involving 105 patients with oral lichen planus showed that 14.3% had Hashimoto's Thyroiditis (20). A case-control study showed an association of oral lichen planus with thyroid disease (21).

Mohsin Muzaffar Tak et al. conducted a study on 50 patients comprising 32 females and 18 males of OLP, and an equal number of age and sex-matched controls, for demographic trends, clinical profiling, and relevance to thyroid disorders and noted that a significant percentage of OLP patients have deranged thyroid function, especially hypothyroidism (22).

Siponen et al. (23) carried out a retrospective case-control study to test the association of OLP with thyroid disease in a Finnish population. They used data from the medical records of 152 oral lichen planus (OLP) patients and 70 oral lichenoid lesions (OLL) patients and 222 age- and sex-matched controls. Their study revealed thyroid gland dysfunction in 15% (22) of cases with OLP, in 13% (9) of cases with OLL, and in 8% (18) of the control subjects. Among patients with thyroid disease, hypothyroidism was found to be more common, found in 10% (15) of the OLP cases, 9% (6) of the OLL cases, and 5% (11) of the controls.

Vladimíra et al. observed about 10% of patients with hypothyroidism in their study (24). Recent publication by Robledo-Sierra (25) suggested potential association between OLP and hypothyroidism. The association of these two disorders may not be incidental since both disorders are generally accepted as autoimmune and might share some pathogenetic mechanisms.

Garcia et al. (26) proposed to determine whether thyroid disease constitutes a comorbidity of OLP. Two hundred and fifteen patients diagnosed as having OLP were evaluated concerning their serum thyroid-stimulating hormone and thyroxine (T_4) levels. Diagnosis of thyroid disease was present in 15.3% of OLP patients (33/215) and in 5.2% (12/215) of the control group. OLP patients were associated with thyroid disease, specifically with hypothyroidism.

Muzio et al. (27) found that more people with oral lichen planus (OLP) had a higher incidence of Hashimoto's thyroiditis (HT) than those that did not. In fact, 14.3% of people with LP had Hashimoto's (13% more than the general population, which has a 1% occurrence of HT). They also found that in 93.3% of the cases where Hashimoto's and LP presented together, the Hashimoto's thyroiditis came first, suggesting a causal role for circulating anti-thyroid antibody in lichen planus.

Fatemeh et al. (28) evaluate the association of hypothyroidism and OLP in a sample of Iranian population. A total of 4% of the patients in the control group (n=21) and 6.7% in the case group (n=35) had a history of hypothyroidism. The reported OR for association of thyroid disease and OLP was 1.714 (CI=0.984-2.987).

Jairo et al. (29) noted that the prevalence of thyroid disease in patients with OLP was significantly higher than in the general population. The OLP lesions of patients with concomitant thyroid disease have a different presentation over time, which indicates a specific subgroup of OLP.

Conclusion:

In conclusion, the results this review article revealed that a significant percentage of patients with lichen planus, both oral as well as cutaneous, had associated thyroid gland dysfunction. The results obtained in our study demonstrate that a significant percentage of patients diagnosed with OLP also have an association with thyroid gland dysfunction. However, it is emphasized that further studies are need to be carried out, involving a larger sample size, belonging to a different geographical strata so as to establish the association and the possible mechanisms.

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