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Correlation of Oral Lichen Planus and Oral Lichenoid Lesions: A Preliminary Study

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ABSTRACT:
BACKGROUND: *The aim of this study was to determine the correlation of histopathology and clinical OLP and OLL diagnosis and which histopathologic criteria could best distinguish the OLP and OLL.*
MATERIALS AND METHODS: *The retrospective study group comprised 60 patients who were referred to the Department of Oral Medicine Govt. dental college Srinagar. Diagnosis was based on clinical examination and medical and dental history, intake of drugs, and duration of the lesions. Only patients who underwent biopsy were included in the study. The clinical diagnosis of OLP was established in 50 patients (34 females; 16 males; ratio f/m = 2.12:1), while in 10 patients OLL was diagnosed (4 females; 6 males, ratio f/m = 0.66:1). Clinical diagnosis of OLL was established due to the presence of hyperkeratotic lesions adjacent to amalgam fillings with asymmetric and mainly unilateral distribution and patient medical history related to drugs, which provoke lichenoid changes in oral mucosa.*
RESULTS: *In 56% (28/50) of patients, clinical diagnosis of OLP was histopathologically confirmed, while in 6%(3/50) of cases there was a partial confirmation and only some criteria were fulfilled. In 14%(7/50) of OLP patients, both clinical and histopathologic diagnosis were concordant, while in 24% (12/50) of patients histopathologic diagnosis was nonspecific, being described as inflammation and keratosis. Clinical and histopathological diagnoses coincide in 50% (5/10) of OLL patients. In clinically diagnosed OLL, in one case the diagnosis of OLP was established, and 3 (30%)cases had inflammation and keratosis, while in 1(10%) cases squamous cell carcinoma(OSCC) was diagnosed histopathologically.*

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I. Introduction

Oral lichen planus (OLP) is a chronic, cell-mediated autoimmune condition in which there is damage to the basal keratinocytes in the oral mucosa. These keratinocytes appear to be recognized by the immune system as antigenically foreign, triggering the release of cytokines, chemokines and other proinflammatory mediators as well as the recruitment of an inflammatory infiltrate composed predominantly of T-lymphocytes that results in cell-mediated damage to basal keratinocytes [1]. It has a global prevalence of about 0.5% to 2%, with prevalence rate of 2.6% in the Indian population. It occurs more commonly in females with ratio of approximately 2:1[2,3]. It tends to be more persistent and more resistant to treatment [4]. A small subset of cases of oral lichen planus (OLP) have long been linked with the development of squamous cell carcinoma (SCC). The first critical evaluation of the literature regarding this link was presented by Krutch off and colleagues [5]. Lichen planus (LP) is a chronic inflammatory condition that may affect the skin, scalp, nails, mucous membranes (especially mouth), and the genitalia [6]. Mucous membrane involvement may occur in addition to cutaneous disease, or may be the only manifestation of lichen planus; however, it is estimated that about 50% of the patients with skin lesions have oral lesions [7].

Clinically, it can present as white striations (Wickham's striae), white papules, white plaque, erythema, erosion or blisters (8). The buccal mucosa, dorsum of tongue and gingiva are commonly affected. OLP usually presents as a symmetrical and bilateral lesion or multiple lesions. It can occur in six types of clinical variants namely reticular, papular, plaque like, erosive, atrophic and bullous (9). Burning sensation and sometimes pain usually accompany the erosive, atrophic or bullous type lesion. The clinical differential diagnoses include lichenoid drug eruptions, lichenoid lesions associated with contact hypersensitivity to restorative materials, leukoplakia, lupus erythematosus and graft versus host disease (GVHD).

Oral lichenoid reactions (OLR) are considered variants of OLP. They may be regarded as a disease by itself or as an exacerbation of an existing OLP, by the presence of medication or dental materials. Oral and cutaneous involvements have been reported. It has been associated with numerous drugs, although only some of these have been confirmed. Drugs such as beta blockers, dapsone, oral hypoglycemics, non-steroidal anti-

inflammatory drugs (NSAIDs), penicillamine, phenothiazines, sulfonylureas and gold salts have been associated with lichenoid reactions (10).

The classic histopathologic features of OLP include liquefactive degeneration of the basal cell accompanied by apoptosis of the keratinocytes, a dense band-like lymphocytic infiltrate at the interface between the epithelium and the connective tissue, focal areas of hyperkeratinized epithelium (which give rise to the clinically apparent Wickham's striae) and occasional areas of atrophic epithelium where the rete pegs may be shortened and pointed (a characteristic known as saw tooth rete pegs). Eosinophilic colloid bodies (Civatte bodies), which represent degenerating keratinocytes, are often visible in the lower half of the surface epithelium (11). Degeneration of the basal keratinocytes and disruption of the anchoring elements of the epithelial BM and basal keratinocytes (e.g. hemi desmosomes, filaments, fibrils) weaken the epithelial connective tissue interface. As a result, histologic clefts (Max–Joseph spaces) may form and blisters on the oral mucosa (bullous LP) may be seen at clinical examination. B cells and plasma cells are uncommon findings (12) which are seen more commonly in OLL than OLP.

Modified WHO diagnostic criteria of OLP and OLL (2003)

Clinical criteria

• Presence of bilateral, more or less symmetrical lesions

• Presence of a lacelike network of slightly raised gray-white lines (reticular pattern)

• Erosive, atrophic, bullous and plaque-type lesions are accepted only as a subtype in the presence of reticular lesions elsewhere in the oral mucosa. In all other lesions that resemble OLP but do not complete the aforementioned criteria, the term "clinically compatible with" should be used

Hisopathologic criteria

• Presence of a well-defined band like zone of cellular infiltration that is confined to the superficial part of the connective tissue, consisting mainly of lymphocytes

• Signs of liquefaction degeneration in the basal cell layer

• Absence of epithelial dysplasia When the histopathologic features are less obvious, the term "histopathologically compatible with" should be used.

Final diagnosis OLP or OLL. To achieve a final diagnosis, clinical as well as histopathologic criteria should be included:

• OLP - A diagnosis of OLP requires fulfillment of both clinical and histopathologic criteria

• OLL - The term OLL will be used under the following conditions:

1. Clinically typical of OLP but histopathologically only compatible with OLP
2. Histopathologically typical of OLP but clinically only compatible with OLP
3. Clinically compatible with OLP and histopathologically compatible with OLP.[13]

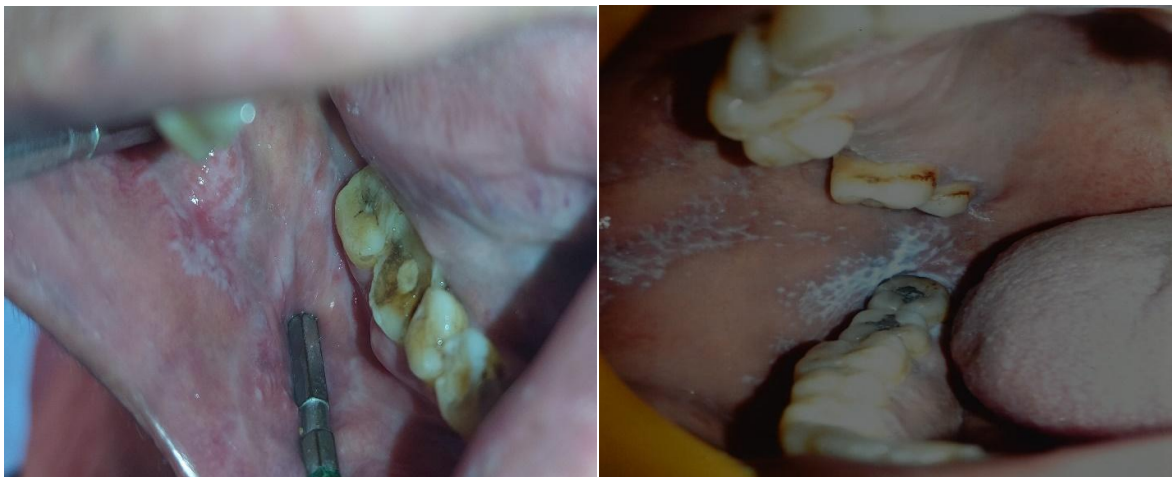
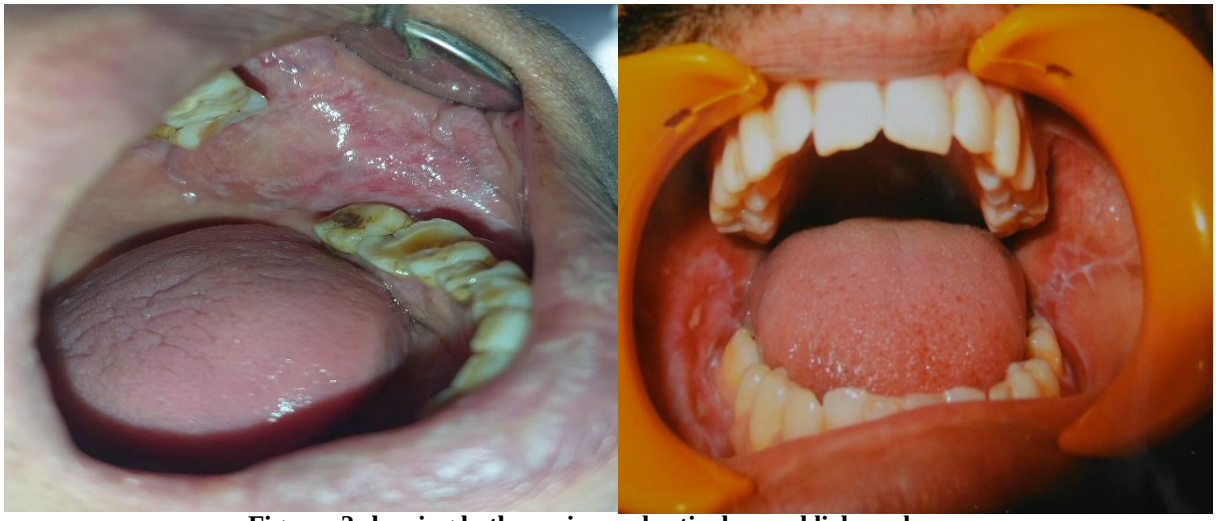


Figure 1 showing reticular oral lichen planus on left side and oral lichenoid lesion adjacent to amalgam restoration on right side.



Figures 2 showing both erosive and reticular oral lichen planus

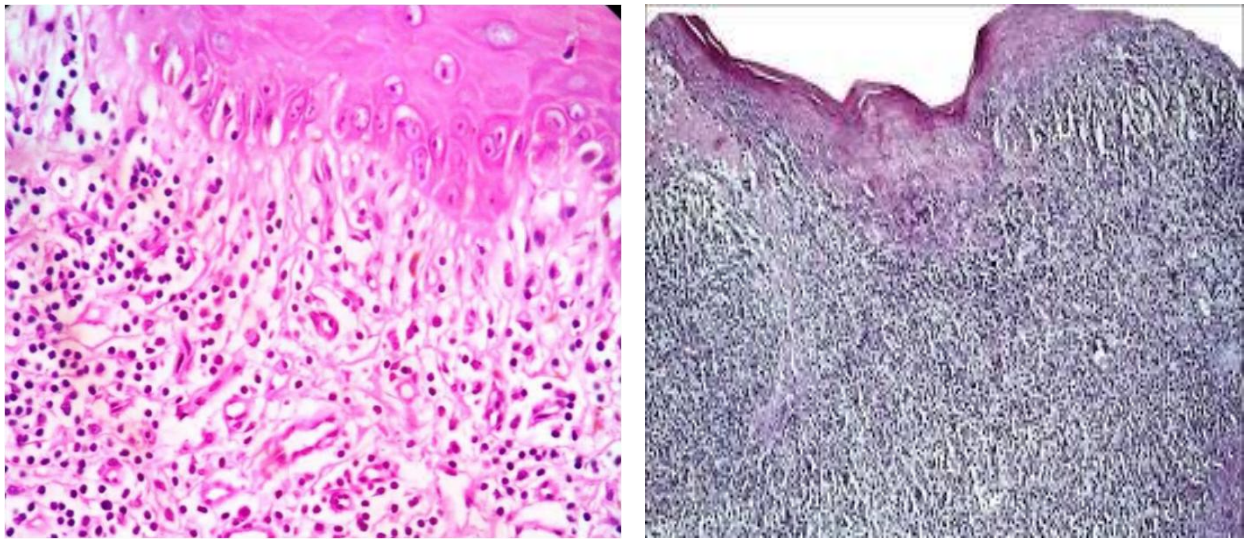


Figure 3 reveals histopathological picture of OLP on left side and OLL on right side

II. Materials And Methods

The retrospective study group comprised 60 patients who were referred to the Department of Oral Medicine and radiology, Govt. Dental College and Hospital Srinagar, in the period between March 1, 2020, and December 31, 2020. Diagnosis was based on clinical examination and medical and dental history, intake of drugs, and duration of the lesions. Clinical diagnoses were established by experienced and trained clinicians, specialist in oral medicine who used the same and consistent criteria in scoring levels of OLP and OLL. Histopathologic diagnosis was established at a single pathology service that is under supervision of an experienced pathologist. In all patients with OLP and OLL oral mucosa swabs for yeast culture on Sabouraud Agar plates (Sabouraud Dextrose Agar (Becton Dickinson and Co., Cockeysville, USA) were taken, as a routine procedure in all patients with white oral lesions. Those who have had positive finding of yeast superinfection were excluded from the study. Only patients who underwent biopsy were included in the study. The clinical diagnosis of OLP was established in 50 patients (34 females; 16 males; ratio f/m = 2.12:1), while in 10 patients OLL was diagnosed (4 females; 6 males, ratio f/m = 0.66:1). The mean age of OLP and OLL patients was 56.1 and 64.9years, respectively.

OLP was diagnosed according to criteria described by Kramer et al. [14]: presence of white papules and/or striae usually with bilateral involvement and histopathological signs of liquefaction degeneration in the basal cell layer (degenerative changes to the basal cells) along with the presence of a well-defined band-like zone of inflammatory infiltrate confined to the superficial part of the connective tissue (this infiltrate being composed almost exclusively of lymphocytes and characterized by absence of epithelial dysplasia),while as in case of OLL eosinophils and plasma cells are predominately present. Clinical diagnosis of OLL was established

due to the presence of hyperkeratotic lesions adjacent to amalgam fillings with asymmetric and mainly unilateral distribution and a patient medical history related to drugs, which provoke lichenoid changes in oral mucosa [15].

Data were analyzed by using Chi-squared test ($\chi 2$) and differences at $P < 0.05$ were considered to be significant as given in table 1.

III. Results:

The distribution of clinical and histopathological diagnoses is shown on Figure4. In 56% (28/50) of patients, clinical diagnosis of OLP was histopathologically confirmed, while in 6%(3/50) of cases there was a partial confirmation and only some criteria were fulfilled. In14%(7/50) of OLP patients, both clinical and histopathologic diagnosis were concordant, while in 24% (12/50) of patients' histopathologic diagnosis was nonspecific, being described as inflammation and keratosis. Clinical and histopathological diagnoses coincide in 50% (5/10) of OLL patients. According to the histopathologic findings, in clinically diagnosed OLL, in one case the diagnosis of OLP was established, and3(30%)cases had inflammation and keratosis, while in 1(10%) cases squamous cell carcinoma(OSCC) was diagnosed.

The distribution of histopathologic features between OLP and OLL with statistically significant differences between the parameters is indicated in Figure2. Results showed significantly more eosinophils ($P < 0.0005$), plasma cells ($P < 0.0005$), and granulocytes ($P < 0.0005$) in OLL than OLP.

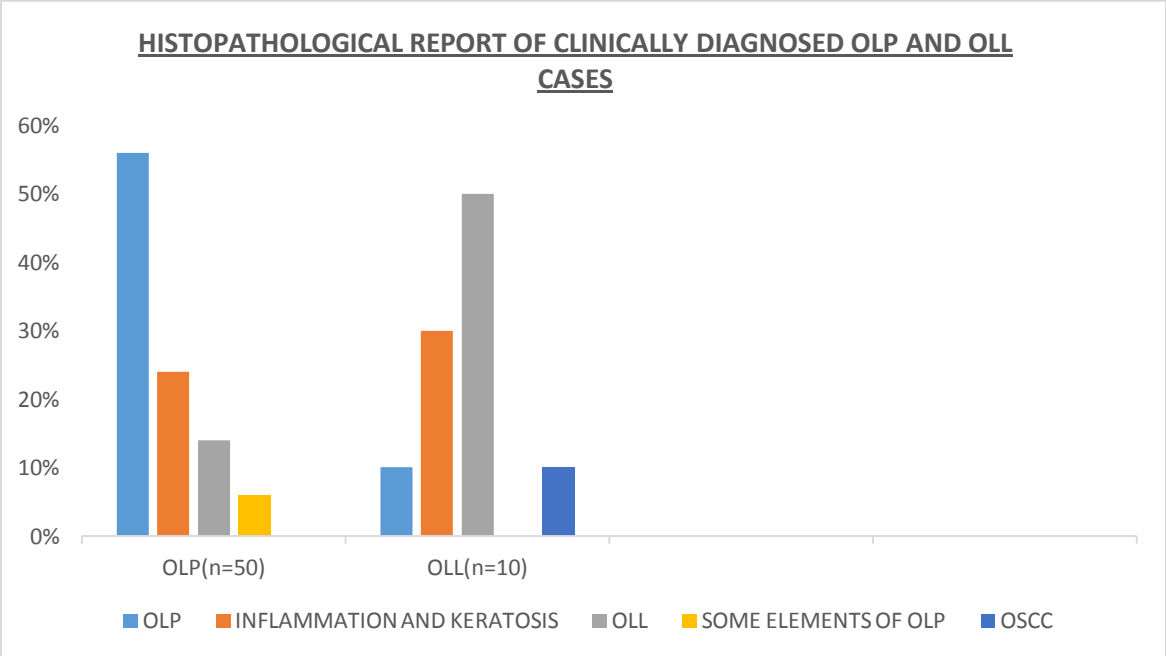


Figure4: The distribution of clinical and histopathologic diagnoses among patients; OLP: oral lichen planus; OLL: oral lichenoid lesions.

TABLE 1

HISTOPATHOLOGICAL FINDING	ORAL LICHEN PLANUS	ORAL LICHENOID LESION	CHI SQUARE TEST {χ^2}	P-VALUE
EOSINOPHILLS	6%	79%	73.8	<.0005
PLASMA CELLS	5.3%	68%	63.46	<.0005
GRANULOCYTES	7.3%	36.9%	32	<.0005

IV. Discussion:

Clinical examination and histopathological analysis are used in daily clinical practice for the diagnosis of OLP and OLL, but sometimes it also represents a diagnostic challenge. Earlier reports reveal that clinical diagnosis depends on clinician interpretation [17, 18], histopathological diagnosis is strictly dependent on a pathologist interpretation as well [19, 20], but also the choice of biopsy area [21], clinical severity of the disease, activity or remission of the disease, and the clinical type of OLP. Keeping in mind these parameters, the results of this study could be partially biased as the patients may have been examined by different clinicians, and histopathological diagnosis was done by different pathologists, so these parameters should be taken into account while performing other study in the future.

According to the results of our study, clinical diagnoses of OLP and OLL have been confirmed histopathologically in 56% patients with OLP and 50% patients with OLL. These results are similar to those

shown by Marinka Mravak-Stipeti´c etal [22], according to whom OLP and OLL was diagnosed histopathologically in 52.2% and 42.9% of cases respectively. Our results also coincided with those of Vander Meij and Vander Waal [17] according to whom 42% of OLP clinically diagnosed cases were not confirmed by histopathology.

Thornhill et al. [23] showed an overall correlation of clinical and histopathological diagnoses of OLP and OLL based on the findings of five different pathologists. Difficulties reported in distinguishing these lesions in histological features were related to amalgam fillings in only 36% of cases. These results are similar to those of Al-ani [24] who found clinical and pathological correlation of OLP in only 38.5%. Rad etal [25] found significantly higher clinical and pathological correlation of OLP(93.9%)in cases in which WHO modified criteria were applied, the results of Radetal. are promising.

The findings of plasma cells, eosinophils, and neutrophils in inflammatory infiltrate can be distinctive for OLL compared to OLP, which is in consensus with our results. Therefore, we consider that this type of cells should be a certain diagnostic feature in histopathologic differentiation between OLP and OLL.

V. Conclusion

OLP and OLL are clinically similar, their prognosis and treatment may vary. In order to achieve accurate histopathologic diagnosis, it is necessary to define the type of cells in mononuclear infiltrate. Based on the results of our study, prominent diagnostic histopathological features in distinguishing between OLP and OLL are the type of cells in the mononuclear cell infiltrate, that is, eosinophils, plasma cells, and granulocytes.

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