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# EVALUATION OF SERUM VITAMIN D LEVEL IN PATIENTS OF ORAL LICHEN PLANUS IN NORTH BIHAR

Dental Science

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## ABSTRACT

**Background:** Lichen planus is an autoimmune chronic inflammatory condition of unknown etiology affecting stratified squamous epithelial. The cell-mediated immunity has a role in both developing oral lichen planus, and immune system regulation, that's why have role in the pathogenesis of oral lichen planus. The roles of vitamin D in an immune system and its role in oral lichen planus has been indicated in recent study.
**Objective:** To determine the level of serum vitamin D in patients with oral lichen planus and in comparison with healthy subjects.
**Material and Methods:** Two group were designed in this case –control study, the first consist of 50 patients with oral Lichen planus, while the second is control group which include 50 healthy people. A 5-ml blood sample was taken from patients and healthy subjects. The serum vitamin D levels were assessed with a vitamin D total (25-hydroxy vitamin D) kit by employing the electrochemiluminescence technique.
**Results-** Vitamin D deficiency was higher in patient with oral lichen planus (61%) and (23.5%) in control group which was statistically significant ($P < 0.003$).
**Conclusion:** The deficiency in serum vitamin D level was related to the development of oral lichen planus.

## KEYWORDS

Vitamin D deficiency, Lichen planus, Oral lichen planus, Autoimmune diseases.

## INTRODUCTION

Lichen planus (LP) is an autoimmune chronic inflammatory disease of the skin and mucous membrane, LP of the mucosa is regard a premalignant condition it is affects approximately 0.5 2% of the general population worldwide [1] . It is usually affects the individuals between the age between 3rd and 6th decade of life, and Asian population most commonly [2]. Female-male ratio of affliction is 3:2 and age of diagnosis of the lesions is 55 years(1) .The percentage of the LP patients with the both skin and oral lesions is established from 50% to 70% [6] .The percentage of the patients present with oral lesions alone is 25%.The clinical features of skin LP are purple, pruritic, polygonal papules with overlying reticular striations that especially on the extremities and lower back[6] .It also involves the scalp, nails, nasal, and other mucosa in the esophagus and genital area [7]. Clinically, reticular, erosive, atrophic, papular, ,plaque-like, and bullous types of OLP can be identified[8] .But practically most oral physician prefer 2 clinical designations: (1) reticular and (2) erosive. Reticular, plaque-like, and papular variants tend to be asymptomatic, while the erosive form is erythematous and usually symptomatic [7,8].The OLP most commonly affect buccal mucosa bilaterally, in descending order of frequency the tongue, gingivae, alveolar ridge, lips, and less commonly the palate may also be affected [9]. Oral pigmentation has also been described in patients with lichen planus (lichen planus pigmentosus) [11]. Lichen planus can result from melanin drop-out, especially in persons with pigmented skinThe etiology of oral lichen planus (OLP) is unknown. Over the years, a large number of evidence has accumulated, indicating the immune system has a primary role in the development of OLP , Histopathological features are infiltration of T lymphocytes as subepithelial band and destruction of basal cells, referred to as liquefaction degeneration, confirms this postulation [1] . The immune system T lymphocytes might have an important role in initial and progression of OLP. These cells cannot have distinguished between the innate molecules of the body and foreign antigens. Activation of autoimmune T lymphocytes is a process that might move from oral mucosa to other parts of the body.].Study established the role of vitamin D in immune system regulation, responses, it inhibits proliferation of T helper cells, stimulates the regulatory effect of T cells, diminishes the B lymphocyte differentiation , also inhibit immunoglobulin secretion .Recent researches reported that the vitamin D has an endocrine effect on immune system cells, and have anti-inflammatory and regulate immune system(1) ..The results of the studies conducted by Marzano et al. [19,20] established the presence and possible effect of vitamin D deficiency in the pathogenesis of bullous mucocutaneous autoimmune diseases and PV. A study on a patient with oral lichen palnus and vitamin D deficiency established improvement after vitamin D therapy reported by Varma et al .Limited studies have been conducted on the role of vitamin D in pathogenesis of LP gave the importance of OLP as a premalignant condition and the possible role of immunologic factors in its etiology, and considering the effect of vitamin D on the immune system. There are many studies deal with the role of the vitamin D on autoimmune diseases. This study determined the level of serum vitamin D in patients with OLP and compare with healthy control subjects.

## MATERIAL AND METHODS

This case- control clinical study was conducted in my clinical practice in north bihar. All the patients signed informed consent forms before being included in the study. No therapeutic intervention was made and the patients' data were kept confidential. No costs were inflicted on the patients for the laboratory tests. Consist of 50 patients with OLP considered as a study group, and 50 healthy from population with age and gender matched age and gender as a control group. Study and control groups were having similar nutritional habits and from the similar socio economic classes and from similar social classes and similar nutritional habits. The diagnosis of OLP based on the biopsy result.

## INCLUSION CRITERIA

Patients without any history of the treatment of OLP.

## EXCLUSION CRITERIA

Patients with oral lesion due to fixed dose reaction or amalgam restoration.
Patients who were already on vitamin D supplementation or on systemic steroids.

Pregnant patient/patients with bone pathology.
Patients with any systemic disease or under medication.

After completion of informed consent forms, the demographic of the patients (age gender), general status of the patient, diseases duration clinical features (types of OLP, symptoms, association with pigmentation, skin lesions) were recorded. A 5-ml blood sample was taken from all the subjects and the serum vitamin D levels were determined with a vitamin D total (25- hydroxy vitamin D) kit using the electrochemiluminescence technique and then were be compared with healthy subjects. The normal laboratory ranges of the serum vitamin D if lower than 20 ng /ml were regarded as vitamin D deficiency, if serum vitamin D level between 20-30 ng /ml were regarded as insufficient vitamin D, the serum vitamin D level between 30-100 ng/ml were considered as sufficient vitamin D ,the level of vitamin D more than 100 ng/ml were considered as hyper- vitamin D.

## STATISTICAL ANALYSIS

Student's t- test of two independent samples was used to compare two means. Chi-square test of association was used to compare proportions. A p-value of $\leq 0.05$ was considered to be statistically significant.

## RESULTS

The study group (cases) consist of 50 patients with oral lichen planus, in addition to 50 patients who served as a control group. Table (1) shows that three-quarters of the patients had either vitamin D deficiency (61%) compared with 23.5% respectively among the controls (p = 0.003).

**Table (1): Categories of vitamin D3 levels among cases and controls**

| | Patient | | control | | Total | | |
|---|---|---|---|---|---|---|---|
| D3 level | No | % | No | % | No | % | P |
| Deficient | 25 | 61 | 11 | 23.5 | 43 | 42.2 | |
| Insufficient | 11 | 16 | 11 | 21.5 | 15 | 17.8 | |
| Sufficient | 14 | 23 | 28 | 55 | 42 | 39 | 0.003 |
| Total | 50 | 100 | 50 | 100 | 100 | 100 | |

## DISCUSSION

The serum vitamin D level was estimated in patients with OLP gr oup and in the control group. The results show statistically significant difference in serum vitamin D levels between the two groups the deficiency was found in 61% of the patient with OLP compared with 23.5% of control group, while the insufficient vitamin D was higher in control 21.5% as compared to OLP group 16%, other study reported the deficiency in serum vitamin D was more common in OLP cases (70.6%) when compared with control group (34.3%) , but insufficient serum vitamin D was more common in control group (35.3)when compared with OLP group(16.7%)The hypothesis of vitamin D deficiency as a contributing factor in lichen planus supported by the study done by Van Belle et al [8].

This results indicate that there is a correlation between the vitamin D deficiency or serum vitamin D level and the types OLP.

## CONCLUSION

The deficiency in serum vitamin D level related to the development of oral lichen planus.

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