

Frequency of Distribution and Relationship of Nail Changes and Oral Mucosal Involvement in Classical Lichen Planus (LP)

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¹ Conception of study

¹ Experimentation/Study conduction

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Abstract

Introduction: LP is an itchy dermatosis. It is of different types with classical LP being a common type. It most commonly affects the skin of the limbs, however, it can affect the mucous membranes, genitals, and nails as well.

Materials and Methods: 100 patients of classical LP presenting in Dermatology OPD of Benazir Bhutto Hospital were enrolled to assess the involvement of nails and oral mucosa in the disease. Statistical Analysis was done using SPSS version 23.

Results: Out of 100 patients, 70% were free from any oral mucosal or nail involvement, whereas, 7% had both oral mucosal as well as nail involvement with classical LP. 18% had oral mucosa affected but nails spared and only 5% had nails affected without oral mucous membrane involvement with the diseases. 25% had oral mucosal involvement with the reticular pattern being the most common type and 12% showed nail changes with longitudinal ridging being the most common. Fisher's exact test computed a two-tailed p-value of 0.0093 showing a significant association of nail changes in classical LP with oral mucosal involvement.

Conclusion: Classical LP is an itchy condition which most commonly affects the skin, mucous membranes, and nails. However, if oral mucous membranes are involved, the risk of having nails affected by the disease is quite significant. The distribution frequency of nail and oral mucosal changes as well as their predominant subtypes associated with classical LP in South Asians is comparable with the rest of the world & other types of LP.

Keywords: Classical lichen planus, oral mucosal involvement, nail changes, LP.

Introduction

Lichen planus (LP) is a cell-mediated autoimmune dermatosis which may involve skin, mucosa, hair, and

nails.¹ Cutaneous LP has various types; however, the usual presentation of the disease is classical LP that appears as red/ purple flat-topped papules with Wickham striae that predominantly involves the flexural aspect of arm.² The exact prevalence is

unknown. The estimated prevalence ranges from 0.22% to 5% worldwide.³

LP can involve the mucous membranes. It can be seen in patients without any skin involvement as well. The buccal mucosa is involved in 80-90% of cases.⁴ The lesions are characterized by white or gray streaks commonly forming a reticular or linear pattern. Oral subtypes of LP are reticular, erosive, papular, atrophic and bullous.⁵ Reticular type is the most common type of oral type.⁶ Ulcerated oral lesions can have malignant potential, especially, in males. Lesions may also be found in conjunctivae, larynx, tympanic membrane, urinary bladder and throughout the GI tract.

Nail involvement in LP varies from 1-10%. Fingernails are more commonly affected than toenails. LP can affect the nail bed as well as its matrix. Typical nail changes are longitudinal grooving and ridging (most common), longitudinal melanonychia, hyperpigmentation, subungual hyperkeratosis, and onycholysis.⁷ Occasionally, the complete destruction of nail followed by pterygium formation may occur due to inflammation.

This study is designed to look specifically for nail and oral mucosal involvement in classical LP and to see the frequency of distribution of these changes in the South Asian Population. Most of the studies done previously are in the western population plus involvement of nail and oral mucosa in one specific type of LP i.e. Classical LP remains indeterminate.

Materials and Methods

A cross-sectional study was carried out at the Department of Dermatology, Benazir Bhutto Hospital, Rawalpindi from June 2016 to November 2016. The study was assessed for ethical review and approved by the Institutional research Forum of Rawalpindi Medical University, Rawalpindi. A total of 100 patients of classical LP coming to OPD were enrolled to assess the nail and oral mucosal changes.

Patients were diagnosed as cases of classical LP on the basis of clinical examination by two dermatologists. Patients of both genders with ages above 8 years with classical LP for less than 6 months were included in the study. Patients with known comorbidities like diabetes mellitus, chronic renal failure, chronic lung disease, hypertension, any chronic (including LP) or other acute dermatosis or any psychiatric illness were excluded from the study.

A complete cutaneous examination was done to see the extent of disease. The oral mucosal and nail

changes were observed along with the type of these changes. Duration of disease, demographic details of patients and characteristics of oral mucosal and nail involvement by classical LP observed during the clinical examination were noted on a preformed proforma. All the statistical analysis was done using SPSS v. 23.

Result

A total of 100 patients were enrolled in the study having classical LP, keeping in view, the inclusion and exclusion criteria. There were 53% of males and 47% of females. At the time of presentation, the mean duration of disease was 2.1 ± 1.5 months (where 1 month = 30 days). The mean age of subjects was 32.8 ± 15.4 years.

A high percentage (70%) of the subjects showed neither oral mucosal nor nails involvement with classical LP whereas a small proportion (7%) had both nails and oral mucosa affected by classical LP. 18% of the population had oral mucosal involvement exclusive of nail changes whereas only 5% showed nail changes without mucosal involvement. This is illustrated in Table I.

Table I: 2x2 contingency table

Classical LP		Nail Changes	No Nail Changes	Total
Oral Mucosal Involvement		7	18	25
No Oral Mucosal Involvement		5	70	75
Total		12	88	100

Out of 100 subjects, 25% of the patients had oral mucosal involvement with the reticular pattern being the most common type of change affecting 21% of the population. This was followed by papular lesions that were present along with reticular lesions in 6% of the patients. Erosions were present in 2% and purplish to blackish pigmentation was seen in 1% of the subjects only. The main site involved was buccal mucosa with a few patients having the involvement of hard palate and lips. A combination of various types was predominantly observed. The distribution pattern of these changes and oral involvement with classic LP in our patients is demonstrated in Figures I & II. Frequency of distribution, of the oral mucosa, changes with classical LP (Total of 25% population).



Figure I: Linear white striation involving the oral cavity in a patient with classic LP



Figure II: Hyperpigmentation with the reticular lacy pattern involving buccal mucosa, tongue, and lips (most Common type of oral presentation in classic lichen planus).

Overall, 12% patients had nail changes with longitudinal grooving and ridging being the most common finding affecting 9% of the subjects, pterygium was seen in 3%, periungual rash with paronychia in 2%, thinning of nail plate in 2%, melanonychia in 1% and pitting with onycholysis was present in 1% of the patients. Longitudinal grooving and ridging were predominantly observed in combination with other nail changes in patients. Fingernail involvement was more than toenail involvement. The frequency of distribution of nail changes is summed up and various nail changes associated with classic LP in our subjects are shown in Figure III.

Frequency of distribution of nail changes with classical LP (Total of 12% population).



Figure III

Figure III: Various nail changes associated with classic LP

- Longitudinal ridging and dystrophic nails
- Melanonychia
- Linear melanonychia
- Periungual erythema with subungual hyperkeratosis
- Subungual hyperkeratosis, pitting, and onycholysis
- Anonychia
- Dystrophic nails

A Fisher exact test was used to calculate two-tailed p-values for nail changes observed in classical LP in association with oral mucosal involvement and with $p=0.0903$ ($<0.05=$ statistically significant) we infer that classical LP with mucosal involvement tend to affect nails much more commonly as the same disease without oral involvement.

Discussion

LP is a cell-mediated itchy dermatosis with an unclear cause. It can affect the patient at any age but most patients are middle-aged (30-60 years old).⁸ The age of the patients presenting with classical LP to us was highly variable with a median of 30.11. There was a slight predominance of male patients as compared to females in our study. This finding is consistent with other studies, however, contradicted by others as well in the past.^{9,10,11} In literature, therefore, no clear cut gender predisposition for the disease has been described yet.

The mean time of presentation of patients in our study was 2.1 ± 1.5 months (where 1 month = 30 days). The reason for this may be found in the fact that the maximal spreading of LP usually occurs within 0.5-4 months. Itching is quite bothersome during this period and thus patients present to dermatologists. This is also, because, the financial and educational status of the patients that present to us is unfortunately not that good and cosmetic reasons for the presentation of dermatosis is certainly not a reason for most of our patients.

LP usually occurs only on cutaneous surfaces but it may also involve the mucosa or nails. Many studies have been conducted showing the distribution frequency and associations of mucosal and nail changes and their variants in LP but they are largely on the western population and have not covered specifically classical LP in this regard. The prevalence of oral mucosal changes associated with LP in the South Asian population is about 2.8% that is quite high as compared to the rest of the world.¹² Our study, adds to the literature, the frequency of distribution and association of oral mucosal and nail changes, as well as, their variants were seen specifically in classical LP in the South Asian population.

A prior study showed that genitalia was most commonly affected in about 25% of the patients having oral mucosal changes with LP, whereas, involvement of nails, esophagus or eyes was less common.¹³ Our study though, does not shed light on prevalence of nail changes associated with LP having oral mucosal involvement; it does show that if a patient is having oral mucosal changes with LP then his chances of having nail involvement with disease are significantly high. So if a patient comes in with oral changes associated with LP, a thorough examination of nails of fingers and toes is warranted plus the patient should be educated of the likelihood of spread of his disease

to the nails and measures should be taken to prevent this beforehand.

The oral mucosal involvement in LP has mainly four major variants with the reticular type being the most common manifestation and buccal mucosa being the most common site of involvement. The subjects in our study also showed a predominantly reticular type of oral mucosal changes with classical LP followed by papules, erosions, and pigmentation. Anatomically most common site affected was buccal mucosa followed by hard palate and lips. Mostly combination of different types of oral mucosal changes was observed in patients. These results are in accordance with previous studies that have been done in rest of the world including one study from South Asia (India) as well.^{14,15,16,17}

Nail involvement with classical LP is less common. There are a variety of forms of its manifestations, however, grooving and ridging are the most common. Our subjects also showed predominantly grooving and ridging followed by pterygium, a periungual rash with paronychia, thinning of the nail plate, melanonychia and pitting with onycholysis. Grooving and ridging were observed concomitantly with other changes. Fingernails were involved more frequently as compared to toes nails. These results are also in accordance with other studies conducted in rest of the world including one study again from South Asia (India), though carried out on children.^{18,19,20}

Conclusion

Classical LP is an itchy condition which most commonly affects the skin, the oral mucous membranes, and nails. However, if oral mucosa is involved, the risk of getting nails affected by the disease is significantly high. The frequency of distribution of nail changes and oral mucosal involvement as well as their predominant subtypes associated with classical LP in South Asians is comparable with the rest of the world and other types of LP.

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