Original Article

Indian Journal of Pathology: Research and Practice
Volume 5 Number 2, May - August 2016
DOI: http://dx.doi.org/10.21088/ijprp.2278.148X.5216.3

Lichen Planus: Skin Biopsy is Definitive

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Abstract

Context: Lichen planus (Greek leichen' "tree moss"; Latin planus, " flat") is a unique, common inflammatory disorder that affects the skin, mucous membranes, nails and hair. Lichen planus may be clinically confused with guttate psoriasis, drug reaction, lichen nitidus and secondary syphilis. Any papular lesion such as granuloma annulare, Pityriasis rosea, and lichen amyloidosis may mimic lichen planus. The violet color of the papulonodular lesions of Kaposi's sarcoma may transiently be confusing but skin biopsy is definitive. Because all papulosquamous disorders are characterized by scaling papules, clinical confusion may result during their diagnosis. Separation of each of these becomes important because the treatment and prognosis for each tends to be disease-specific. *Aim:* To study the pattern of clinical and histopathological features of lichen planus of the skin with clinicopathological correlation. *Material and Methods:* The present study of 12 cases of lichen planus of the skin was carried out in the Department of Pathology of a tertiary care centre from December 2009 to October 2011. In this study, the patients which were clinically diagnosed as lichen planus of skin, before starting the treatment and attending the outdoor skin department were selected. Histopathological findings were interpreted in light of clinical details. *Results:* Out of 12 cases 6 (50%) were males and 6 (50%) were females with male to female ratio of 1:1. Maximum number of cases 6 (50%) were noted in the age group of 21-40 years. Mean age was 26.16 years. Histopathological findings: hypergranulosis, hyperkeratosis, vacuolar alteration, band like infiltrate, irregular acanthosis with saw toothed rete ridges and melanin incontinence were noted in most of the cases of lichen planus. *Conclusion:* Histopathology serves as a diagnostic tool and rules out other lesions which mimic lichen planus.

Keywords: Lichen Planus; Clinico-Histopathological.

Introduction

Lichen planus (Greek leichen' "tree moss"; Latin planus, " flat") is a unique, common inflammatory disorder that affects the skin, mucous membranes, nails and hair. The appearance of lichen planus and lichen planus-like or lichenoid dermatoses has been likened to the scurfy, finely furrowed, dry excrescences of the symbiotic vegetation known as lichen [1,2,3]. Lichen planus may be clinically confused with guttate psoriasis, drug reaction, lichen nitidus and secondary syphilis. Any papular lesion such as granuloma annulare, Pityriasis rosea, and lichen amyloidosis may mimic lichen planus. The violet color of the papulonodular lesions of Kaposi's sarcoma may transiently be confusing but skin biopsy is definitive [4]. The skin has a limited number of reaction patterns with which it can respond to various pathological stimuli: clinically different lesions may show similar histological patterns. Therefore, to obtain the precise diagnosis of the skin biopsy, it should be accompanied by all clinical details [5].

Thus, the present study is carried out to study the pattern of clinical and histopathological features of lichen planus of the skin with clinicopathological correlation.

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Material and Methods

The present study of 12 cases of lichen planus of the skin was carried out in the Department of Pathology of a tertiary care centre from December 2009 to October 2011. In this study, the patients which were clinically diagnosed as lichen planus of the skin, before starting the treatment and attending the outdoor skin department were selected. Detailed clinical history, thorough physical examination and thorough examination of lesions of each & every case were carried out as per the proforma. Informed consent was taken before biopsy. Before preceding the biopsy, xylocaine sensitivity test was done by injecting 0.5ml of xylocaine subcutaneously. The lesion was selected for biopsy and the skin surface was cleaned with a spirit swab. Local anaesthesia was best obtained by infiltration of 2% lignocaine solution with adrenaline under the lesion. Scalpel biopsy was done to obtain an adequate amount of tissue for diagnosis of the most skin lesions. Biopsy specimen was kept in 10% formalin for 24 hrs for fixation. After fixation, the specimens were processed in an automatic tissue processor. After processing, the paraffin blocks were made and cut on a rotary microtome into 5microns thick sections. Sections were stained with hematoxylin & eosin and were examined by conventional light microscopy. Detailed microscopic examination was undertaken for histopathological diagnosis of lichen planus of the skin. Histopathological findings were interpreted in light of clinical details.

Results

Clinical Features of Histologically Diagnosed Cases of Lichen Planus of the Skin

Out of 12 cases 6 (50%) were males and 6 (50%) were females with male to female ratio of 1:1. Maximum number of cases 6 (50%) were noted in the age group of 21-40 years. Mean age was 26.16 years.

-Flat topped violaceous papule 10 (83.33%) was the commonest type of lesion in lichen planus. Anatomical distribution pattern revealed that most frequently involved site was lower limb 10 (83.33%), followed by upper limb 7 (58.33%), trunk 4 (33.33%), neck 3 (25%), face 1(8.33%) and scalp 1(8.33%). Itching was the commonest complaint of patients of lichen planus seen in 10 (83.33%) cases. Family history was noted only in one patient 1(8.33%). Histopathological findings of lichen planus of the skin is shown in Table1.

Out of 12 histologically diagnosed cases of lichen planus, 10 (83.33%) had clinical diagnosis of lichen planus while two cases (16.66%) were clinically other lesions, one was psoriasis and other was lichen striatus. Thus, histopathology gave diagnosis in 16.66% of the cases.

Discussion

Lichen planus is a prototype of lichenoid dermatitis. It is worthwhile, at this point of time, to recognize lichenoid tissue reaction as an exclusive clinical and pathological entity, which has several dermatoses of heterogeneous nature under its ever enlarging domain, thus further highlighting the importance of reaching the correct diagnosis [6]. Besides, the same patient can present at different times with a different clinical presentation or variant [7].

In lichen planus, Anbar et al [8] (2005), Montoya et al [9] (2005), Kachhawa et al [10] (1995), Garg et al [11] (2000) noted peak incidence in 3rd and 4th decade of life. Age distribution pattern in our study is well correlated with Anbar et al[8] (2005) and Montoya et al[9] (2005).

In lichen planus, Kachhawa et al[10] (1995) and Anbar et al [8] (2005) noted male preponderance in their study while Garg et al [11] (2000), Nangia et al [12] (2000) and Montoya et al [9] (2005) reported female preponderance in their study. Gibson et al [4] (1992) stated that men and women are equally prone to lichen planus. According to Pittelkow et al [1] (2008) there is no sexual predilection in lichen planus. In our study both sexes were equally affected, which is well correlated with Gibson et al2 (1992) and Pittelkow et al35 (2008).

Boyd et al [13] (1991) stated that cutaneous lesions of lichen planus consist of flat topped violaceous papules. Garg et al [11] (2000) reported that, 72% patients presented with flat topped violaceous papules, while 16% had both papules and plaques while Nangia et al [12] (2000) noted that 60% of the patients had flat topped violaceous papules and 20% had both papules and plaques. In the present study, flat topped violaceous papule 10 (83.33%) was the commonest type of lesion in lichen planus which is in accordance with other studies.

Kachhawa et al[10] (1995) noted that the involvement of lower extremities was found to be highest (61.9%), followed by upper extremities (60.5%), trunk (35.5%), back (27.7%), face (23.7%) and scalp (5.3%). Tompkins [14] (1995) in a study of lichen planus, disclosed a 55% prevalence of leg lesions versus 37% prevalence of arm lesions. Altman et al[15] (1961) reported that limbs (89%) were the most

Table 1: Histopathological pattern of lichen planus of the skin

Histological features	Number of cases n=12	Percentage (%)
Hyperkeratosis	11	91.66
Focal parakeratosis	1	8.33
Hypergranulosis	12	100
Acanthosis with saw toothed rete ridges	10	83.33
Marked acanthosis	1	8.33
Epidermal atrophy	1	8.33
Follicular plugging	1	8.33
Vacuolar alteration	12	100
Civatte bodies	3	25
Band like infiltrate	12	100
Melanin incontinence	11	91.66
Spongiosis	4	33.33
Max Joseph space	2	16.66

Table 2: Histological subtypes of lichen planus

Type	Number of cases n=12	Percentage (%)
Classical lichen planus	9	75
Hypertrophic lichen planus	1	8.33
Lichen planopilaris	1	8.33
Actinic lichen planus	1	8.33

Comparison of clinical diagnosis with histological diagnosis in lichen planus shown in Table 3:

Table 3: Cases of lichen planus showing clinicopathological discrepancy

Biopsy no.	Clinical diagnosis	Histopathological diagnosis
100432	Lichen planus	Lichen striatus
100442	Psoriasis	Lichen planus
111575	Lichen striatus	Lichen planus

Table 4: Comparison of histological features of lichen planus

Histological features	Ellis et al [20] (1967) n=100 (%)	Garg et al [11] (2000) n=75 (%)	Present study (2011) n=12 (%)
Hyperkeratosis	87	100	91.66
Focal parakeratosis	12	-	8.33
Hypergranulosis	93	85	100
Irregular acanthosis with saw toothed rete ridges	32	93 82	83.33
Epidermal atrophy	47	-	8.33
Follicular lesions	6	-	8.33
Vacuolar alteration (basal cell liquefaction)	100	100	100
Civatte bodies	37	37	25
Band like infiltrate	100	100	100
Melanin incontinence	-	100	91.66
Spongiosis	-	-	33.33
Max Joseph space	17	-	16.66

Table 5: Comparison of histological subtypes of lichen planus

Types of lichen planus	Garg et al [11] (2000) n=75 (%)	Zxuejun et al [21] (*2009*) *n=255 (%)*	Present study (2011) n=12 (%)
Classical	64	49.7	75
Hypertrophic	26.66	28.6	8.33
Lichen planopilaris	2.67	0.9	8.33
Actinic	4	-	8.33
Atrophic	-	17	-
Pigment	-	1.9	-
Bullous	-	1.9	-
Oral lichen planus	2.67	-	-

Fig. 1: Lichen planus: Flat topped violaceous scaly papules and plaques on the right lower limb

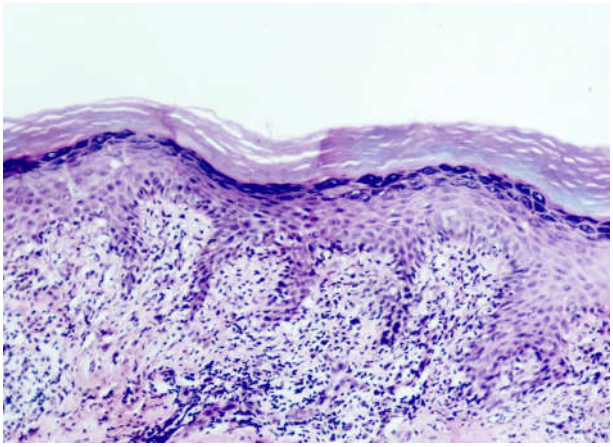

Fig. 2: Lichen planus: Photomicrograph of classical lichen planus showing ortho-hyper keratosis, wedge shaped hypergranulosis, irregular acanthosis, with saw toothed rete ridges, vacuolar alteration of basal layer and band like lymphocytic infiltrate at dermo-epidermal junction. (100X H&E)

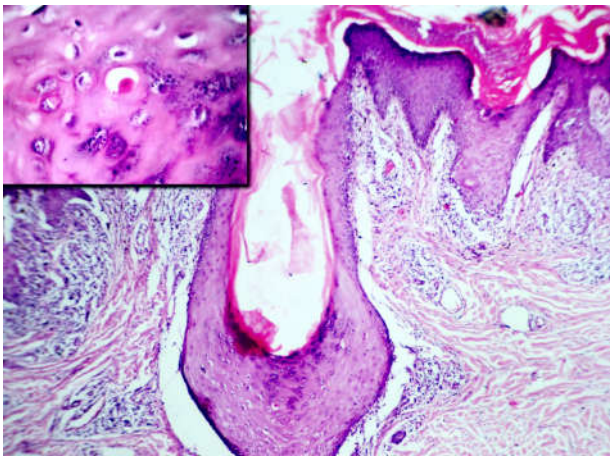

Fig. 3: Lichen planus: Photmicrograph of hypertrophic lichen planus showing marked acanthosis, ortho-hyper keratosis, wedge shaped hypergranulosis, vacuolar alteration of basal layer and civatte body (40X H&E). Inset showing civatte body.(400X H&E)

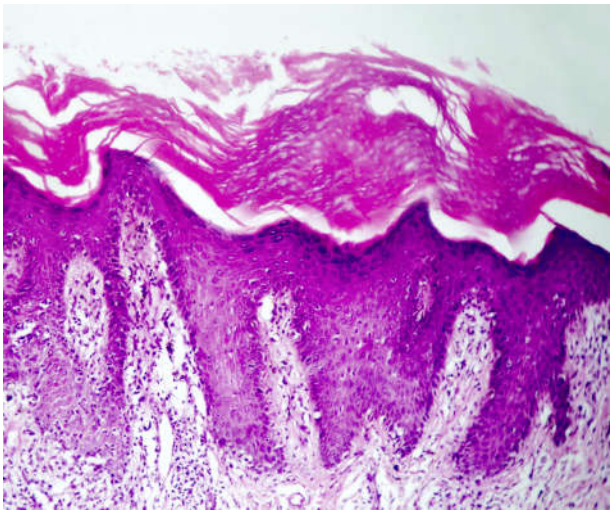

Fig. 4: Lichen planus: Photomicrograph of hypertrophic lichen planus showing marked acanthosis, ortho-hyperkeratosis, and wedge shaped hypergranulosis (100X H&E)

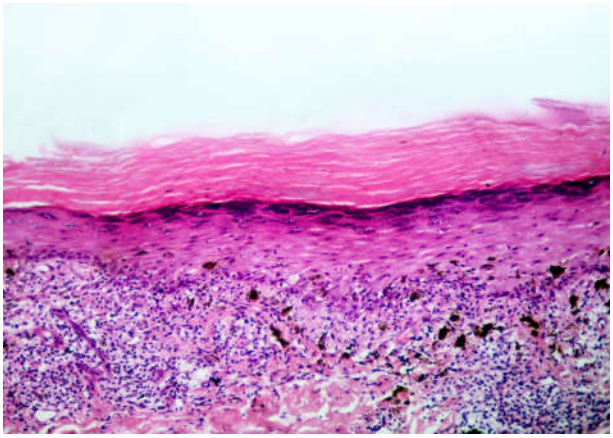

Fig. 5: Lichen planus: Photomicrograph of actinic lichen planus showing epidermal atrophy, pigment incontinence in the form of melanophages, orthokeratosis, wedge shaped hypergranulosis, vacuolar alteration of basal layer and band like lymphocytic infiltrate at dermo-epidermal junction.(100X H&E)

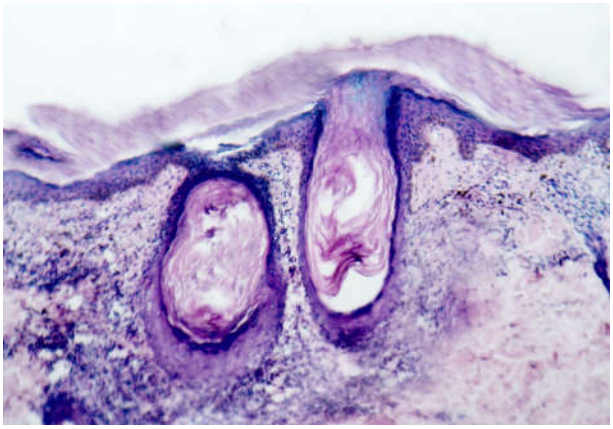

Fig. 6: Lichen planus: Photomicrograph of lichen planopilaris showing follicular plugging and dense infiltration around follicles and band like lymphocytic infiltrate at dermo-epidermal junction.(100X H&E)

prevalent site of lichen planus. We also noted that lower limbs were the most frequent site of involvement in lichen planus.

Boyd et al [13] (1991) stated that lichen planus tends to be intensely pruritic. Our finding is in accordance with Boyd et al [13] (1991), Garg et al [11] (2000), Nangia et al [12] (2000). In the present study, family history was noted only in one patient 1(8.33%) while, Kacchawa et al [10] (1995), Bermejo-Fenoll et al [16] (2006) and Kanwar et al [17] (2010) in their study noted family history of lichen planus in 2.133%, 5.2% and 2% cases respectively. Pittelkow et al [1] (2008) stated that the familial form of lichen planus tends to be more protracted and severe and presents in erosive, linear, or ulcerative patterns or with atypical features affecting young adults and children. Mahood et al [18] (1983) postulated that the familial lichen planus seem to be a disease of younger onset than ordinary lichen planus. In our study, we noted family history in a 6 year old male child. Thus, our finding is in accordance with other studies.

Maize et al [19] (1998) stated that the classic polygonal papule of lichen planus reflects the way in which the lymphocytic infiltrate and hyperplastic epidermis raise the surface of the skin. The violaceous color is imparted by the hues of inflammatory cells, dilated vessels, and melanophages filtered through a thickened epidermis. The translucent scale is produced by uniform hyperkeratosis without the intracorneal inflammatory cells that would render it opaque [19]. Comparison of histological features of lichen planus is shown in Table 4.

Various histopathological studies of lichen planus like Ellis et al [20] (1967), and Garg et al[11] (2000) noted following histological findings: hyperkeratosis, wedge shaped hypergranulosis, vacuolar alteration (basal cell liquefaction) of basal layer and band like lymphocytic infiltration at dermo-epidermal junction in most of the cases. We also noted similar findings. Garg et al [11](2000) noted irregular acanthosis with saw toothed rete ridges and pigment incontinence in the form of melanophages in most of the cases. However, Ellis et al [20] (1967) noted irregular acanthosis with saw toothed rete ridges only in 32 % cases. Our findings are in accordance with Garg et al [11] (2000). Ellis et al [20] (1967) and Garg et al [11] (2000) both noted civatte bodies in 37% of the cases. In our study, civatte body was noted in 25% of the cases which is in accordance with other studies.

Comparison of histological variants of lichen planus is shown in Table-5. Other histopathological studies like Garg et al [11] (2000) and Zxuejun et al [21] (2009) also noted classical lichen planus as the commonest histological variant of lichen planus. We noted, hypertrophic lichen planus in one case (8.33%), however Garg et al [11] (2000) and Zxuejun et al [21] (2009) noted hypertrophic variant in 26.66% and 28.6% cases respectively. Hypertrophic variant in our study revealed marked acanthosis and hyperkeratosis as compared to classical lichen planus which is in accordance with Boyd et al [13] (1991) and Garg et al [11] (2000). We noted, lichen planopilaris in one case (8.33%). Garg et al [11] (2000) and Zxuejun et al [21] (2009) also noted lichen planopilaris only in few cases. In lichen planopilaris, we noted follicular plugging and dense infiltration around follicles along with changes of classical lichen planus. Garg et al[11] (2000) also noted similar histological findings in lichen planopilaris.

Garg et al [11] (2000) noted actinic lichen planus in 4% cases, while we noted actinic variant in one case (8.33%). In our study, actinic variant showed epidermal atrophy and focal parakeratosis along with changes of classical lichen planus. Garg et al [11] (2000) reported that the epidermal thinning was observed in all cases of actinic lichen planus while Boyd et al [13](1991) stated that lichen planus actinicus is histologically identical to classical lichen planus except for the presence of focal parakeratosis. Thus, our findings of histological subtypes of lichen planus are comparable with other studies.

Comparison of Clinical Diagnosis with Histological Diagnosis in Lichen Planus

In the present study, out of 12 histologically diagnosed cases of lichen planus, 10 (83.33%) had clinical diagnosis of lichen planus while two cases (16.67%) were clinically other lesions, one was psoriasis and other was lichen striatus. Inaloez [22] (1998) assessed the clinicopathological correlation of lichen planus in 31 cases, out of which 70.97% cases had clinical diagnosis of lichen planus; while 29.03% cases were clinically other lesions. Thus, our findings are comparable with Inaloez [22] (1998).

Pittelkow et al [1] (2008) stated, psoriasis as one of the differential diagnosis of classic variant of lichen planus. Clinically lichen planus must be differentiated from other papulosquamous disorders such as psoriasis and secondary syphilis. Herd et al [23] (1993) believed that linear lichen planus and lichen striatus are the opposite ends of a spectrum. Pittelkow et al [1] (2008) stated lichen striatus as one of the differential diagnosis of linear lichen planus. According to Gibson et al [4] (1992) lichen planus may be clinically confused with guttate psoriasis, drug reaction, lichen nitidus and secondary syphilis. Any

papular lesion such as granuloma annulare, Pityriasis rosea, and lichen amyloidosis may mimic lichen planus. The violet color of the papulonodular lesions of Kaposi's sarcoma may transiently be confusing but skin biopsy is definitive [4].

Inaloez [22] (1998) also stated that the diagnostic rate increased up to 100% by the presence of clinical information and histological examination. Gibson et al [4] (1992) postulated that confirmation of lichen planus with a skin biopsy is always warranted.

Thus, we noted that histology has major contribution in diagnosis of lichen planus, which is in accordance with Gibson et al [4] (1992), Inaloez [22] (1998) and Sehgal et al [6] (2011).

Conclusion

Lichen planus is a prototype of lichenoid dermatitis. Lichen planus has varied clinical presentations. Besides, same patient may present with different types of lesions. Accordingly, it was considered imperative to recapture the precise clinical as well as pathological overtones to exercise the relevant treatment modality. Thus, in lichen planus, skin biopsy is definitive.

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