

CASE REPORT

Annular Plaques in the Skin Folds: 4 Cases of Lichen Planus Pigmentosus-Inversus

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Abstract. We report 4 patients with relatively asymptomatic, annular brownish plaques arising in the skin creases. The lesions had remained stable for months despite many topical treatments. Histological examination revealed an atrophic epidermis with a dermal lichenoid inflammatory infiltrate showing marked pigmentary incontinence. These clinical and pathological features were consistent with lichen planus pigmentosus-inversus, a rare, recently described variant of lichen planus, with only 10 cases reported to date. It has been suggested that the intensity and speed of onset of the inflammatory response could be modulated by keratinocyte surface markers, which could also determine the typical morphology of the lesions of this disease.

Key words: lichen planus, lichen planus pigmentosus-inversus, intertriginous location.

PLACAS ANULARES EN GRANDES PLIEGUES: CUATRO CASOS DE LIQUEN PLANO PIGMENTOSO-INVERSO

Resumen. Describimos 4 pacientes que consultaron por placas paucisintomáticas anulares marronáceas localizadas en grandes pliegues. Dichas placas habían permanecido estables durante meses, a pesar de haber intentado múltiples tratamientos tópicos. Histológicamente se objetivó una epidermis atrófica, así como un inflamatorio liquenoide dérmico con marcada incontinencia de pigmento. Estos cuadros eran clínica e histológicamente compatibles con el diagnóstico de liquen plano pigmentoso-inverso (LPP-inv). El LPP-inv es una rara variedad de liquen plano recientemente descrita del que solamente se han comunicado con anterioridad 10 casos. Se ha postulado que la intensidad y la rapidez con que se establece la respuesta inflamatoria podría estar modulada por marcadores de la superficie de los queratinocitos, que a su vez determinaría la morfología típica de las lesiones de LPP-inv.

Palabras clave: liquen plano, liquen plano pigmentoso-inverso, localización intertriginosa..

Introduction

Lichen planus (LP), the prototypical lichenoid dermatitis, is an idiopathic inflammatory disorder of the skin and mucosas. Many clinical variants of LP have been described, among them, oral, ungual, actinic, eruptive, annular, atrophic, hypertrophic, bullous, pigmentosus (LPP), inversus, follicular, linear, and ulcerative forms.¹

LPP-inversus is an uncommon clinical variant of LPP that was described only recently, with fewer than a dozen cases in white patients reported to date (Table).²

Case Reports

Case 1

An 84-year-old man with no relevant medical history consulted due to the appearance about 2 months earlier of slightly pruritic, infiltrated, violaceous-brown macules in the right axilla (Figure 1A). As we were uncertain about the diagnosis, we performed a skin biopsy, which showed epidermal atrophy with extensive basal vacuolization and a prominent band-like inflammatory infiltrate in the superficial dermis (Figure 1B). A diagnosis of atypical LP was established, and high-potency corticosteroid therapy was initiated. Nevertheless, at 1 month of follow-up there was scant improvement of symptoms.

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Table 1. Clinical Characteristics of Patients With Lichen Planus Pigmentosus-Inversus

No. of cases.	Sex/Age, y	Race	Site	Classic LP	Symptoms
1	Poch et al, 2001 ² /M/66	White	Axilla, back	Yes	Mild pruritus
2	Poch et al, 2001 ² /W/54	White	Axilla, pretibial area	Yes	No
3	Poch et al, 2001 ² /W/68	White	Axilla, inframammary, groin	No	No
4	Poch et al, 2001 ² /W/71	White	Axilla, groin	No	Mild pruritus
5	Poch et al, 2001 ² /W/60	White	Axilla, groin	No	No
6	Poch et al, 2001 ² /M/57	White	Axilla, groin	Yes	Mild pruritus
7	Poch et al, 2001 ² /M/46	White	Axilla, groin	No	Mild pruritus
8	Kim et al, 2008 ⁴ /M/70	White	Groin	Yes	No
9	Kashima et al, 2007 ⁹ /W/51	Asian	Axilla	No	No
10	Kashima et al, 2007 ⁹ /M/62	Asian	Axilla, groin, popliteal region	No	No
11 ^b	M/84	Caucasian	Axilla, neck	No	Mild pruritus
12 ^b	W/72	Caucasian	Inframammary folds	No	No
13 ^b	M/59	White	Axillas, groin	No	Mild pruritus
14 ^b	W/54	White	Axilla, popliteal region	No	No

Abbreviations: LP, lichen planus; M, man; W, woman.

^aCases described in the present article.

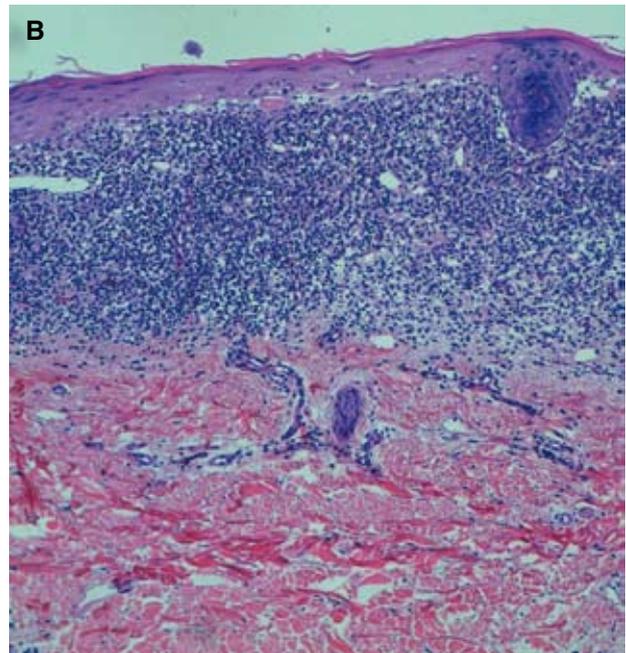


Figure 1. (A) Violaceous-brown macules in the axilla characteristic of lichen planus pigmentosus inversus. (B) Marked epidermal atrophy with basal vacuolization, necrotic basal keratinocytes and lichenoid infiltrate in the superficial dermis (hematoxylin-eosin, original magnification $\times 100$).

Case 2

A 63-year-old woman visited our clinic because of the appearance 3 months earlier of 3 asymptomatic brownish plaques located in the inframammary folds. The patient

reported no relevant medical history or recent medication use. Skin biopsy findings were consistent with lichenoid dermatitis with marked pigmentary incontinence in the superficial dermis (Figure 2). Blood tests revealed that the patient was positive for hepatitis C virus (HCV),

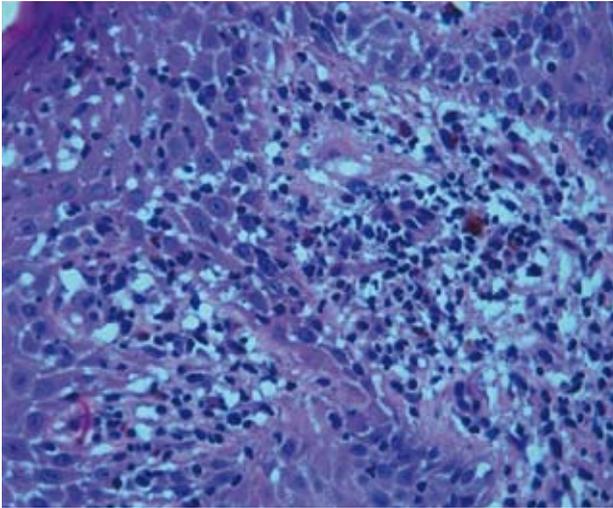


Figure 2. Interface dermatitis with vacuolization of the basal membrane, predominantly lymphocytic, band-like inflammatory infiltrate, and pigmentary incontinence in the superficial dermis (hematoxylin-eosin, original magnification $\times 400$).



Figure 3. Dark brown macule with atrophic center and raised borders in the popliteal fossa.

although she was unaware of this. At 3 weeks of follow-up, the lesions had not improved with topical calcineurin inhibitor therapy. Treatment was discontinued and after 6 months the lesions had undergone progressive spontaneous regression.

Case 3

A 59-year-old man with no relevant past history visited our clinic due to the gradual appearance of slightly pruritic skin lesions over the previous few months. Physical examination showed well-delimited, brownish, annular polycyclic plaques in both axillae and inguinal folds. No lesions were found on the rest of the body or

on mucosal surfaces. A skin biopsy revealed lichenoid changes. Treatment with 0.05% clobetasol propionate cream produced only slight improvement.

Case 4

A 54-year-old woman with no relevant medical history consulted for asymptomatic lesions that had appeared 12 months earlier in the right axilla and left popliteal fossa. Physical examination revealed nonscaly, hyperpigmented lesions with an atrophic center and a slightly raised border (Figure 3). Skin biopsy revealed a band-like lymphohistiocytic infiltrate with abundant colloid bodies and pigmentary incontinence as well as melanophagia in the papillary dermis. The patient was treated with 0.1% tacrolimus ointment and 0.05% clobetasol propionate cream, with minimal improvement of the skin lesions at 1 month of follow-up, and treatment was therefore discontinued. The patient was lost to follow-up.

Discussion

LPP, a variant of LP first described by Bhutani³ in 1974, affects patients of the darkly pigmented races of India and the Middle East and is characterized clinically by hyperpigmented macules located principally in sun-exposed areas, such as the face and upper limbs. Recently, Pock et al² described a rare form of LPP that they called LPP-inversus. It differs from LPP in that it mainly affects white patients (although some cases in Asian patients have been reported⁴) and in that it is located almost exclusively in the skin folds.

Clinically, LPP-inversus is characterized by the gradual appearance of well-delimited violaceous-brown macules that are only mildly symptomatic and are confined to intertriginous areas. While the most commonly reported site is the axillae, the inframammary and inguinal folds and the popliteal fossae are also frequently affected. Skin lesions clinically and histologically suggestive of classic LP can be found in nonintertriginous areas in a small percentage of patients (10%).

LPP-inversus does not usually affect skin appendages or mucosal surfaces, and to date has not been associated with drugs, hepatotropic viral infections, or neoplastic diseases. The second case described above, in which the patient was found to be positive for HCV (although she was unaware of this), is worthy of comment. This finding has never before been reported in a case of LPP-inversus, and we therefore do not know what role HCV infection may have played in the development of the condition in that patient. As HCV has been associated with some subtypes of LP, specifically with the mucosal erosive variant, larger studies

are needed to determine the role of HCV infection in the development of LPP-inversus.

Histologically, although both LPP-inversus and classic LP are characterized by more or less intense basal vacuolization, LPP-inversus differs from classic LP in that there is intense epidermal atrophy without reactive acanthosis. In the papillary dermis, areas of lichenoid inflammatory infiltrate can be seen to alternate with areas of marked regression, melanophagia, and pigmentary incontinence.² The melanophages in the superficial dermis give LPP-inversus lesions their characteristic dark brown color and distinguish them from those of ashy dermatosis, in which the melanophages are found in deeper layers of the dermis, and the lesions acquire a bluish-gray color as a result of the Tyndall effect.⁵

It is thought that both the morphology of the lesions and the histological findings may be the result of a specific pathogenic process in which a rapidly developing lichenoid reaction gives rise to intense basal vacuolization of the epidermis without the compensatory acanthosis typically found in LP.² Subsequently, a rapid regression of the inflammatory infiltrate would leave an atrophied epidermis with signs of melanophagia and pigmentary incontinence in the dermis.

As in classic LP, LPP-inversus is assumed to be the result of direct T lymphocyte-mediated cytotoxic activity against basal keratinocytes.⁶ It is known that keratinocytes usually express the HLA-DR antigen on their surface and that this antigen plays a fundamental role in the induction and perpetuation of the inflammatory process. However, in contrast to classic LP, HLA-DR antigen expression on the surface of keratinocytes in patients with LPP-inversus has been reported to be weak.⁴ This fact may explain the rapid regression of the lichenoid infiltrate, the minimal pruritus, and the limited duration of the inflammatory process, which differentiate it from the course in classic LP, in which the HLA-DR antigen is abundantly expressed on the surface of keratinocytes.⁷

The course of LPP-inversus can vary. Reports have ranged from cases in which lesions disappeared spontaneously in a few weeks⁴ to others that were resistant to multiple topical treatments (clobetasol propionate and 0.1% tacrolimus ointments).⁸ In our experience, LPP-inversus lesions tend to persist for months, despite multiple topical treatments. Nevertheless, treatment with medium or high potency corticosteroids or topical

calcineurin inhibitors for a few weeks is recommended to accelerate the healing process. We must always bear in mind, however, the principle of *primum non nocere* and avoid overly aggressive therapies, as the process is benign and tends to resolve spontaneously.

The differential diagnosis of LPP-inversus includes principally LPP³ and LP actinicus,⁹ both of which tend to affect dark-skinned races and to produce lesions that are usually located in sun-exposed areas. Other conditions that should also be included are fixed pigmentary eruption, candida intertrigo, acanthosis nigricans, lichenoid toxic dermatitis, or ashy dermatosis when the lesions are located in skin folds.⁵

Conflicts of Interest

The authors declare no conflicts of interest.

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