Lichen planus pigmentosus

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Abstract

Lichen planus pigmentosus (LPP) is an uncommon variant of lichen planus of unclear etiology that predominantly affects patients of skin types III to VI. We report a case of LPP of two years duration in a 67-year-old man involving upper extremities, chest, abdomen, and upper back.

Keywords: lichen planus pigmentosus, dermatology, pigmentation

Introduction

Lichen planus pigmentosus is an uncommon and poorly understood variant of lichen planus. It is characterized by insidious onset of light to dark brown to bluish macules on sun-exposed areas that later progress to confluent hyperpigmented patches that may involve the face, neck, trunk, and extremities. The treatment for LPP is not well defined as many of the treatments are ineffective.

Case Synopsis

A 67-year-old man presented to the Skin and Cancer Unit at New York University Langone Health for evaluation and management of skin hyperpigmentation. He reported that the discoloration initially started two-years prior on his upper extremities and then progressed to involve his chest, abdomen, and upper back. The patient reported that it was pruritic. He previously received phototherapy with some clinical improvement.

His past medical history included melanoma, coronary artery disease, gastroesophageal reflux disease, hepatosplenomegaly, hyperlipidemia, and hypertension. His medications included atorvastatin, metoprolol, ranolazine, omeprazole, aspirin, and ibuprofen. He denied fever, chills, weight loss, nausea, emesis, or diarrhea.

The patient was well-appearing, alert, oriented, and in no acute distress. There were multiple brown-to-erythematous macules and patches, many in a reticulated pattern, on the upper extremities, chest, back, abdomen, scalp, and conchal bowl without follicular plugging (**Figure 1**).

The scalp had brown-to-erythematous macules and patches in a reticulated pattern. No nail-fold changes and no oral mucosal lesions were present. Dermoscopic examination under polarized light with 10× magnification showed diffuse brown background with pseudo-networks and gray globules and blotches (**Figure 2**).

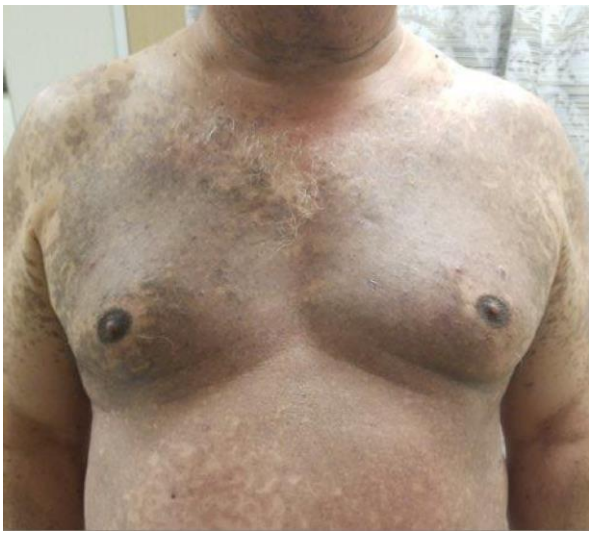

Figure 1. *Multiple brown-to-erythematous macules and patches, many of which in a reticulated pattern, on the upper extremities, chest, and abdomen.*

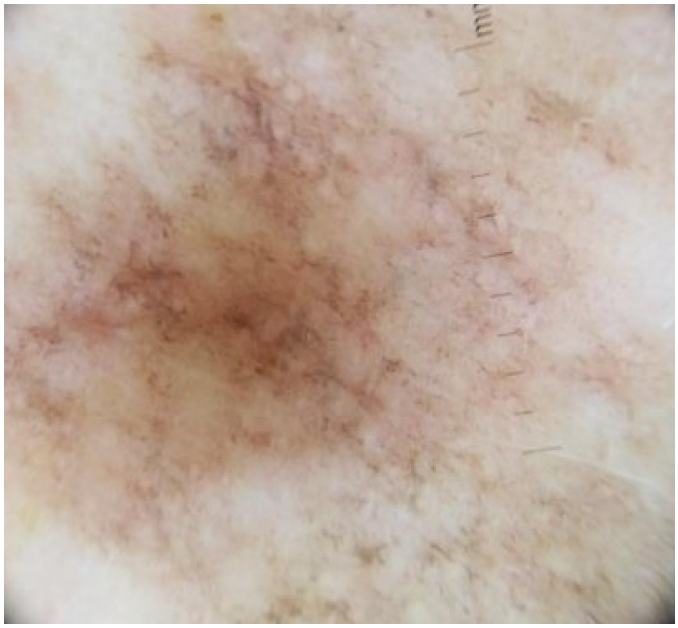

Figure 2. *Dermoscopic examination under polarized light with 10× magnification showing diffuse brown background with pseudo-networks and gray globules and blotches.*

A complete metabolic panel showed elevated fasting glucose at 117 mg/dL. A complete blood count, thyroid stimulating hormone level, free thyroxine level, and Quantiferon-gold test were within normal limits. A hemoglobin A1c level was slightly elevated at 5.8%. Tests for hepatitis C virus antibody, hepatitis B surface antigen, and hepatitis B surface antibody were negative.

A 4mm punch biopsy was performed on the hyperpigmented patches on the mid-back. This exhibited a patchy band-like lymphocytic infiltrate and numerous melanophages in the superficial dermis. Some lymphocytes extended to the dermoepidermal junction where there were vacuolar changes with occasional necrotic keratinocytes (**Figure 3**).

Discussion

Lichen planus pigmentosus is an uncommon variant of lichen planus that predominantly affects patients of skin types III to VI [1-3]. The etiology of lichen planus pigmentosus is unclear and it runs an insidious course. Associations with ultraviolet light, hepatitis C virus, mustard oil, amla oil, hair dyes, and turmeric-based powder and liquid (kumkum) have been reported [4-7]. Lichen planus pigmentosus may also present concomitantly with hepatitis C infection [5], nephrotic syndrome [8], head and neck cancer, frontal fibrosing alopecia, acrokeratosis of Bazex [9], and circulating autoantibodies [7, 10]. Although classified as a subtype of lichen planus, it is often considered a disorder of pigmented dermatosis overlapping with erythema dyschromium perstans [1, 3, 7]. Other disorders in the differential diagnosis include macular amyloidosis, generalized fixed drug eruption, urticarial pigmentosa, post-inflammatory hyperpigmentation, idiopathic eruptive macular pigmentation, and hyperpigmentation from drugs, friction, and heavy metals [1, 7].

Lichen planus pigmentosus has a characteristically slow onset initially beginning as light-to-dark-brown-to-bluish macules on sun-exposed areas that later progresses to confluent hyperpigmented patches [1-4, 11]. It may involve many areas of the body including face, neck, trunk, upper extremities, and lower extremities with sparing of the flexural areas. The term lichen planus pigmentosus inversus has been coined to characterize involvement in intertriginous areas [12-17]. Other patterns of lichen planus pigmentosus described include diffuse, reticular, linear, perifollicular, Blaschkoid, and zosteriform [7, 18-21]. Wickham striae are typically absent and pruritus is not a predominant symptom [6, 7].

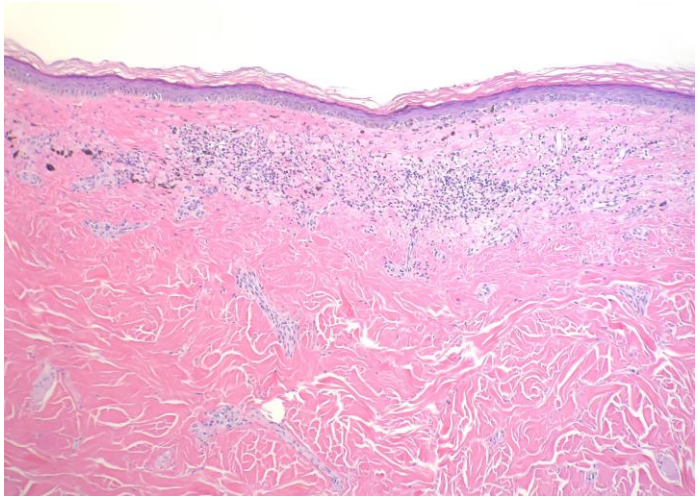

Figure 3. *Patchy band-like lymphocytic infiltrate and numerous melanophages in the superficial dermis. Some lymphocytes extend to the dermoepidermal junction where there are vacuolar changes with occasional necrotic keratinocytes. H&E, 10×.*

Histologically, lichen planus pigmentosus demonstrates vacuolar degeneration of the basal cell layer with perivascular or lichenoid infiltrate, pigmentary incontinence, keratinocyte apoptosis, and superficial dermal melanophages. A mild epidermal atrophy with a basket-weave pattern of hyperkeratosis may be present in some cases [2, 3, 6, 11, 22].

The natural course of the disease is unclear and sometimes unpredictable, with some cases showing spontaneous resolution while other cases exhibit persistent pigmentation. The treatment for lichen planus pigmentosus is not well defined as many of the treatments are ineffective. No therapeutic option has shown consistent responses or a clear superiority to other modalities. Avoidance of potential triggers is advised such as reducing friction in lichen planus pigmentosus inversus and photoprotection in the actinic variant. Reported therapeutic regimens included oral systemic retinoids, topical and systemic corticosteroid, topical and oral tacrolimus, oral dapsone, laser treatment, and photoprotection [1, 2, 7]. However, the therapeutic data is limited to case reports and small case series. In an open-label, non-randomized, prospective study performed in Kuwait, tacrolimus ointment applied twice daily for six to twelve weeks was found to be effective in 53.8% of patients [22]. However, in one case report, tacrolimus ointment and clobetasol ointment were found to be ineffective [23]. In another case report, a Chinese woman who failed topical betamethasone valerate, hydroquinone, and combination tretinoin/hydroquinone/fluocinolone creams saw marked improvement with Q-switched neodymium-doped yttrium aluminum garnet laser treatment with a low-fluence, large-spot-size "skin-toning" protocol (spot size 6mm, fluence 3 J/cm^2, pulse duration 5ns, 10 passes per session) repeated fortnightly for a total of 28 sessions [24]. The ideal therapeutic regimen and treatment ladder for lichen planus pigmentosus are yet to be determined.

Conclusion

In conclusion, we report a case of lichen planus pigmentosus. It is important for dermatologists and other clinicians to recognize this uncommon clinical variant of lichen planus, understand its natural course, and the currently undefined therapeutic ladder.

References

1. Robles-Mendez JC, Rizo-Frias P, Herz-Ruelas ME, Pandya AG, Ocampo Candiani J. Lichen planus pigmentosus and its variants: review and update. *Int J Dermatol*. 2017. [PMID: 29076159].
2. Orme CM, Kim RH, Brinster N, Elbuluk N, Franks AG, Jr. Lichen planus pigmentosus. *Dermatol Online J*. 2016;22(12). [PMID: 28329536].
3. Cobos G, Kim RH, Meehan S, Elbuluk N. Lichen planus pigmentosus and lichen planopilaris. *Dermatol Online J*. 2016;22(12). [PMID: 28329547].
4. Bhutani LK, Bedi TR, Pandhi RK, Nayak NC. Lichen planus pigmentosus. *Dermatologica*. 1974;149(1):43-50. [PMID: 4154221].
5. Vachiramon V, Suchonwanit P, Thadanipon K. Bilateral Linear Lichen Planus Pigmentosus Associated with Hepatitis C Virus Infection. *Case Rep Dermatol*. 2010;2(3):169-72. [PMID: 21060775].
6. Kanwar AJ, Dogra S, Handa S, Parsad D, Radotra BD. A study of 124 Indian patients with lichen planus pigmentosus. *Clin Exp Dermatol*. 2003;28(5):481-5. [PMID: 12950331].
7. Ghosh A, Coondoo A. Lichen Planus Pigmentosus: The Controversial Consensus. *Indian J Dermatol*. 2016;61(5):482-6. [PMID: 27688435].
8. Mancuso G, Berdondini RM. Coexistence of lichen planus pigmentosus and minimal change nephrotic syndrome. *Eur J Dermatol*. 2009;19(4):389-90. [PMID: 19451054].
9. Sassolas B, Zagnoli A, Leroy JP, Guillet G. Lichen planus pigmentosus associated with acrokeratosis of Bazex. *Clin Exp Dermatol*. 1994;19(1):70-3. [PMID: 8313644].
10. Parodi G, Parodi A, Guarrera M, Cannata G, Piccardo G. Lichen pigmentosus with scarring alopecia and circulating antinuclear antibodies. *Int J Dermatol*. 1990;29(3):227-8. [PMID: 2186005].
11. Rieder E, Kaplan J, Kamino H, Sanchez M, Pomeranz MK. Lichen planus pigmentosus. *Dermatol Online J*. 2013;19(12):20713. [PMID: 24365004].
12. Ghorbel HH, Badri T, Ben Brahim E, Fenniche S, Benmously R, Mokhtar I. Lichen planus pigmentosus inversus. *Indian J Dermatol Venereol Leprol*. 2014;80(6):580. [PMID: 25382538].
13. Dizen Namdar N, Kural E, Pulat O, Metineren MH, Sarici G. Lichen planus pigmentosus-inversus: 5 Turkish cases. *J Eur Acad Dermatol Venereol*. 2016;30(3):450-2. [PMID: 25363366].
14. Barros HR, Almeida JR, Mattos e Dinato SL, Sementilli A, Romiti N. Lichen planus pigmentosus inversus. *An Bras Dermatol*. 2013;88(6 Suppl 1):146-9. [PMID: 24346904].

15. Gaertner E, Elstein W. Lichen planus pigmentosus-inversus: case report and review of an unusual entity. *Dermatol Online J*. 2012;18(2):11. [PMID: 22398232].
16. Ohshima N, Shirai A, Saito I, Asahina A. Lichen planus pigmentosus-inversus occurring extensively in multiple intertriginous areas. *J Dermatol*. 2012;39(4):412-4. [PMID: 22035127].
17. Pock L, Jelinkova L, Drlik L, Abrhamova S, Vojtechovska S, Sezemska D, Borodacova I, Hercogova J. Lichen planus pigmentosus-inversus. *J Eur Acad Dermatol Venereol*. 2001;15(5):452-4. [PMID: 11763389].
18. Hong S, Shin JH, Kang HY. Two cases of lichen planus pigmentosus presenting with a linear pattern. *J Korean Med Sci*. 2004;19(1):152-4. [PMID: 14966361].
19. Kumar YH, Babu AR. Segmental lichen planus pigmentosus: An unusual presentation. *Indian Dermatol Online J*. 2014;5(2):157-9. [PMID: 24860750].
20. Cho S, Whang KK. Lichen planus pigmentosus presenting in zosteriform pattern. *J Dermatol*. 1997;24(3):193-7. [PMID: 9114619].
21. Akarsu S, Ilknur T, Ozer E, Fetil E. Lichen planus pigmentosus distributed along the lines of Blaschko. *Int J Dermatol*. 2013;52(2):253-4. [PMID: 21349081].
22. Al-Mutairi N, El-Khalawany M. Clinicopathological characteristics of lichen planus pigmentosus and its response to tacrolimus ointment: an open label, non-randomized, prospective study. *J Eur Acad Dermatol Venereol*. 2010;24(5):535-40. [PMID: 19840200].
23. Kim BS, Aum JA, Kim HS, Kim SJ, Kim MB, Oh CK, Kwon YW, Kwon KS. Coexistence of classic lichen planus and lichen planus pigmentosus-inversus: resistant to both tacrolimus and clobetasol propionate ointments. *J Eur Acad Dermatol Venereol*. 2008;22(1):106-7. [PMID: 18181983].
24. Han XD, Goh CL. A case of lichen planus pigmentosus that was recalcitrant to topical treatment responding to pigment laser treatment. *Dermatol Ther*. 2014;27(5):264-7. [PMID: 24796489].