Annular and Linear Brown Patches in Axillae

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Case Presentation

A 50-year-old healthy man of central European Caucasian origin presented with a 1-year history of asymptomatic axillary lesions. He denied family history of similar eruptions. He was not taking any medication and he did not apply deodorants or other topical products in the affected area. Recent laboratory data, including blood cell count, renal and liver function, serum electrolyte levels, fasting blood sugar levels, urinalysis, and serological examinations for human hepatitis viruses and syphilis, were all within normal limits or negative. On physical examination, an annular and a linear gray-brown patches were present in the right axilla [Figure 1] and an annular patches in the left one [Figure 2]. These lesions were around 2 cm in diameter, with sharp demarcation and smooth surface. No similar lesions were found in other body parts or in mucous membranes.

Punch biopsy specimens were obtained and sent for hematoxylin and eosin examination [Figures 3 and 4].

Question

What is your Diagnosis?

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Diagnosis
Lichen planus pigmentosus-inversus (LPP-inv).

Discussion
Clinical presentation of the lesions in the skin folds, Caucasian origin of the patient, and histological examination, showing a regressing pattern of LP, are diagnostic of LPP-inv. The lesions remained stable for months despite treatment with topical corticosteroids and calcineurin inhibitors.

LPP-inv was first described by Pock et al. in 2001 in 7 patients from central Europe presenting with brown macules ranging from several millimeters to centimeters in diameter with sharp demarcation and with axillae, groin, or submammary location. It is a rare variant of LPP that mainly affects Caucasian patients and almost exclusively intertriginous areas. Despite this, both entities are variants of LP, with different locations and affecting different ethnic groups, but with similar immunologic mechanisms and histologic features.

The cause of LPP and LPP-inv is unknown. Casual relationships, including drugs, sun exposure, internal malignancy, liver disease, impaired carbohydrate metabolism, and race have been proposed to explain the pathogenesis. In our patient, none of these factors could explain the presence of LPP-inv.

Biopsy specimens show a largely atrophic epidermis with discrete, acanthotic projection only in some areas and without hyperkeratosis or hypergranulosis. The basal layer undergoes low intensity and discontinuous hydropic degeneration. In the upper dermis, the band-like lymphocytic infiltrate is slight to moderate and associated with prominent melanin incontinence.

These findings suggest that lichenoid reaction occurs within a short period, with dramatically intensive hydropic degeneration of basal keratinocytes and without enough time to develop the compensatory increased proliferation of keratinocytes observed in typical LP. For this reason, the associated pruritus may or may not be present.

The differential diagnosis includes not only ashy dermatosis, acanthosis nigricans, and granular parakeratosis but also other entities such as fixed drug eruption, postinflammatory hyperpigmentation.

Ashy dermatosis and LPP have been considered as the same condition by some authors; however, clinical and histological differences have been described. The lesions in ashy dermatosis show a characteristic bluish-gray color, related with the presence of melanophages in deep dermis, and the inflammatory infiltrate does not acquire the band-like pattern of the LPP and LPP-inv.

Acanthosis nigricans has a striking verrucous or velvety surface, the brown plaques tend to be more extensive, and the histological study shows epidermal changes such as orthokeratotic hyperkeratosis, acanthosis, and papillomatosis.

Granular parakeratosis is a rare entity that results from an acquired disorder of keratinization. It presents with dark-brown plaques that usually involve the axilla and other intertriginous areas similar to LPP-inv. However, the presence in biopsy specimens of a thickening of stratum corneum with compact parakeratosis and retention of keratohyalin granules gives the diagnosis of this entity. In addition, some factors such as irritating physical or chemical agents have been implicated as triggers.

Fixed drug eruption was ruled out because the patient was not taking any medication. Previous inflammatory dermatosis in the axillary area was not referred to suspect postinflammatory origin.
Treatment with topical corticosteroids or calcineurin inhibitors has been tried out with differing results, and spontaneous resolution has been described in some cases.

The knowledge of this rare and recently described entity is important to make the correct diagnosis and avoid long and ineffective treatments that waste health-care resources.\(^1\)

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

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