

Coexistence of Lichen Planus Pemphigoides, Palmoplantar Keratoderma of Unna-Thost, and Atopic Dermatitis

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ABSTRACT Lichen planus pemphigoides (LPP) is a very rare autoimmune blistering disease associated with lichenoid skin changes. Unna-Thost palmoplantar keratoderma (PKK) is a type of diffuse palmoplantar keratoderma that mostly affects the palms of the hands and soles of the feet. It usually begins in early childhood. We present a unique case of coexistence of LPP, Unna-Thost PKK, and atopic dermatitis (AD). To our knowledge, there are three reported cases of both LPP and Unna-Thost PKK and a few reports of coexistence of Unna-Thost PKK and AD.

KEY WORDS: Lichen planus pemphigoides, Unna-Thost palmoplantar keratoderma, atopic dermatitis

INTRODUCTION

Lichen planus pemphigoides (LPP) is a very rare autoimmune blistering disease associated with lichenoid skin changes. The gold standard for diagnosing LPP is the presence of linear deposits of autoantibodies along the basement membrane zone (BMZ) on direct immunofluorescence (DIF) in combination with typical clinical features (1,2). We present a unique case of coexistence of LPP, Unna-Thost palmoplantar keratoderma (PKK), and atopic dermatitis (AD).

CASE REPORT

A 35-year-old man presented to our department with a 1.5-month history of pruritic, generalized lichenoid rash and numerous blisters over his limbs. Since his childhood, he had been suffering from AD and asthma together with Unna-Thost PKK. He

reported an intake of antibiotics (clarithromycin and azithromycin) due to fever a few days before blister formation. On clinical examination, confluent pearly, polygonal, erythematous-to-livid papules and plaques were noticed on the trunk (Figure 1, a), wrists, axillae, and legs, together with many blisters and erosions on the acral sites located mainly in areas unaffected by lichenoid lesions (Figure 1, b-d). Lesions on cubital and popliteal folds were consistent with AD. Hyperkeratotic, yellowish, and waxy plaques were present on the patient's palms and soles, sharply demarcated with red rims on the sides of his feet and hands and eczema on the feet, together with knuckle pads over several interphalangeal joints (Figure 2, a-c). Histopathologic findings of a blister from the upper leg confirmed subepidermal bullous dermatosis

with subepidermal cleft and a few eosinophils inside the cleft together with dense infiltrate of lymphocytes, eosinophils, and some neutrophils in the upper dermis. Histopathology of the plaque from the trunk revealed orthokeratosis, focal hypergranulosis, irregular acanthosis, hydropic degradation of the basal layer (Civatte bodies), and lymphocytic infiltrate in the upper dermis (lichenoid band). DIF revealed linear deposition of IgG and C3 along the dermo-epidermal junction. Indirect immunofluorescence (IIF) was negative. The serum anti-BP180 antibody level was positive. Blood tests revealed mild leukocytosis, eosinophilia, and elevated levels of total IgE. Hepatitis and HIV tests were negative, and tumor markers were within normal ranges. Based on all the above clinical and diagnostic findings, the coexistence of LPP, AD, and PPK was established. He was treated with oral prednisone and topical betamethasone cream for three weeks, resulting in total regression of lesions.

DISCUSSION

LPP was first described by Kaposi in 1892 (3). Its pathogenetic mechanism includes basal cell layer damage, which leads to the exposure of BMZ antigens, resulting in autoantibodies production (epitope spreading) (1).

In the presented case, the appearance of bullous lesions on acral regions and mostly outside of lichenoid papules and plaques favored the diagnosis of LPP, unlike bullous lichen planus (LP) where blisters are usually seen on the LP lesions (2). Several drugs, including angiotensin-converting enzyme (ACE) inhibitors, simvastatin, and pembrolizumab, have been implicated as possible triggers (2). Furthermore, viral infections, such as varicella and hepatitis B, may be associated with LPP (2). Our patient reported fever of unknown etiology and the intake of antibiotics before the onset of blisters. Infection cannot be excluded as a possible trigger, whereas antibiotics are less likely implicated because the patient used both antibiotics later without any reactions. Our patient was successfully treated with systemic corticosteroids, similarly to other reported patients with LPP (2).

To our knowledge, there have been three reported cases of both LPP and PPK; however, in those cases PPK was not hereditary, but developed simultaneously with LPP (4-6). There are few reports of coexistence of Unna-Thost PPK and AD (7). It has been suggested that a genetic linkage between these two diseases cannot be excluded even though atopy genes are not in the neighborhood of the genes involved in Unna-Thost PPK (7).

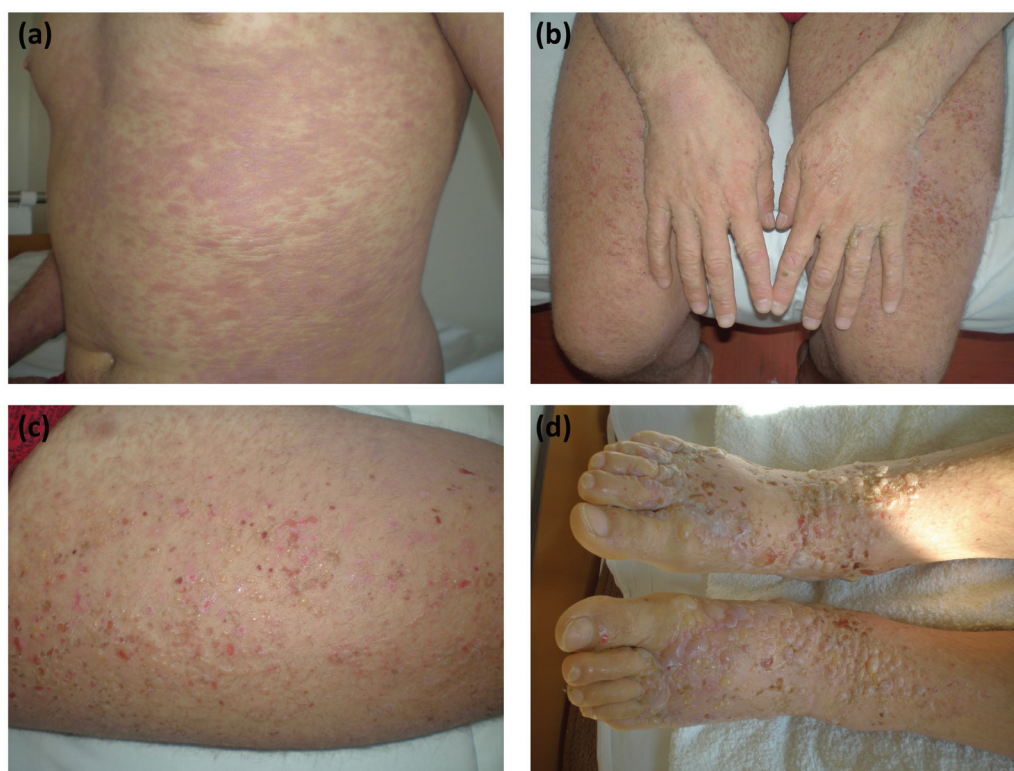


Figure 1. Confluent, violaceous, flat-topped papules and plaques on the patient's trunk (a), together with tense blisters on the hands (b), thighs (c), and the dorsal sides of the feet (d).

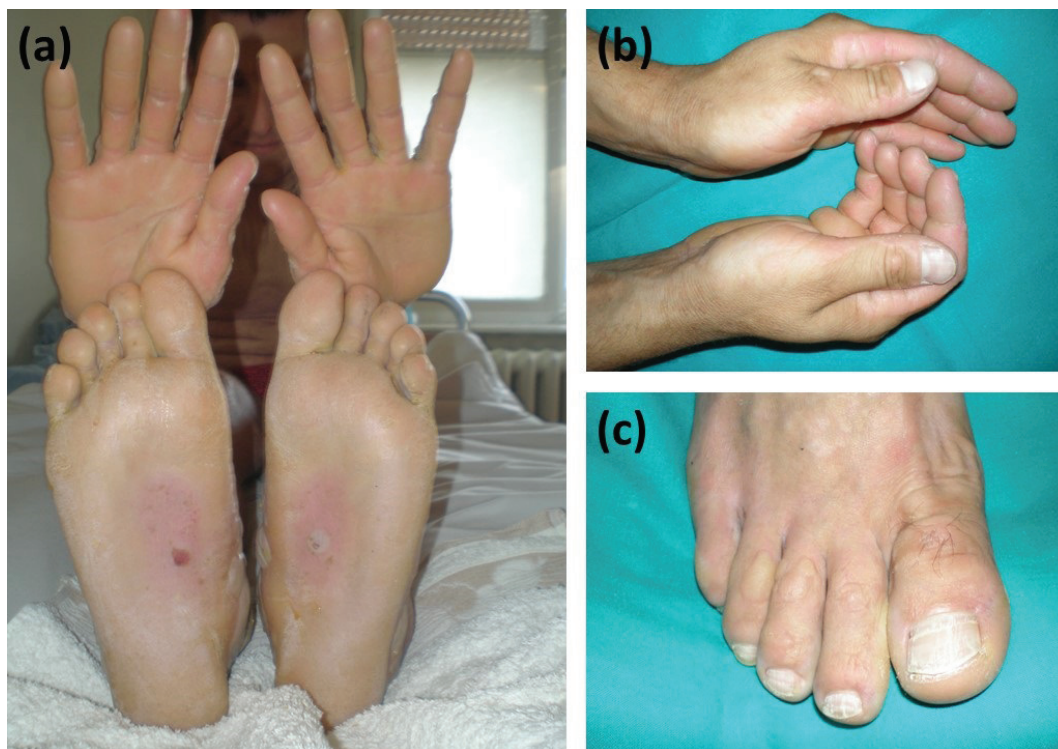


Figure 2. Diffuse thickening of the skin on the palms and soles with yellowish scales (a) and a well-defined rim of demarcation (b). "Knuckle pads" on the dorsal sides of the toes (c).

Both LPP and AD are immune-mediated diseases. The inflammatory process in LP develops mainly due to the activation of the Th1 cascade, with the domination of IFN- γ expression in lesional skin (8). Similarly, there is a marked expression of IFN- γ in chronic AD lesions (9). It could thus be hypothesized that AD and LP share common immunopathological pathways.

To the best of our knowledge, this is the first case with the coexistence of LPP, Una-Thost PPK, and AD, with impressive clinical findings that represent diagnostic and treatment challenges.

References:

1. Zaara Mahfoudh A, Sellami MK, Chelly I, El Euch D, Zitouna M, Mokni M, et al. Lichen planus pemphigoides: four new cases and a review of the literature. *Int J Dermatol.* 2013;52:406-12.
2. Hübner F, Langan EA, Recke A. Lichen planus pemphigoides: From lichenoid inflammation to autoantibody-mediated blistering. *Front Immunol.* 2019;10:1389.
3. Kaposi M. Lichen ruber pemphigoides. *Arch Dermatol Syph.* 1892;24:343-6.
4. Mizawa M, Makino T, Hayashi M, Furukawa F, Shimizu T. A case of lichen planus pemphigoides with palmoplantar keratoderma. *Eur J Dermatol.* 2018;28:100-1.
5. Oomen C, Temmerman L, Kint A. Lichen planus pemphigoides. *Clin Exp Dermatol.* 1986;11:92-6.
6. Yoon KH, Kim SC, Kang DS, Lee IJ. Lichen planus pemphigoides with circulating autoantibodies against 200 and 180 kDa epidermal antigens. *Eur J Dermatol.* 2000;10:212-4.
7. Loh TH, Yosipovitch G, Tay YK. Palmar-plantar keratoderma of Unna Thost associated with atopic dermatitis: an underrecognized entity? *Pediatr Dermatol.* 2003;20:195-8.
8. Pietschke K, Holstein J, Meier K, Schäfer I, Müller-Hermelink E, Gonzalez-Menendez I, et al. The inflammation in cutaneous lichen planus is dominated by IFN- γ and IL-21-A basis for therapeutic JAK1 inhibition. *Exp Dermatol.* 2021;30:262-70.
9. Furue M, Chiba T, Tsuji G, Ulzii D, Kido-Nakahara M, Nakahara T, et al. Atopic dermatitis: immune deviation, barrier dysfunction, IgE autoreactivity and new therapies. *Allergol Int.* 2017;66:398-403.