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Bullous lichen planus accompanied by elevation of serum anti－BP180 autoantibody: A possible transitional mechanism to lichen planus pemphigoides

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Letter to the Editor

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Bullous lichen planus accompanied by elevation of serum anti-BP180 autoantibody: a possible transitional mechanism to lichen planus pemphigoides

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Dear Editor,

Lichen planus (LP) is characterized by hyperkeratotic polygonal papules and plaques on skin surface and mucosae, and can be classified into several clinical subtypes including blistering variants, such as bullous LP (BLP) and LP pemphigoides (LPP) [1, 2]. While the former presents vesicles or blisters limited on preceding LP lesions, the latter is characterized by coincidence of LP lesions and LP-independent blistering lesions induced by autoimmune mechanism against hemidesmosomal protein, such as BP180. Here, we report a case of BLP concomitant with elevation of serum anti-BP180 autoantibody.

A 64-year-old Japanese woman presented with strongly pruritic, disseminated violaceous flat-topped papules and plaques (Fig a, b), where scally tense small bullae with bright red edematous erythematous plaques partially coincided (Fig c). Lace-like reticulated macules were also detected on the buccal mucosae (Fig d). Insulin therapy had been performed for her diabetes mellitus, but no other medication had been administered. Skin biopsy was performed from violaceous papule on the buttock. Histopathology showed compact hyperkeratosis, hypergranulosis, and vacuolar degeneration of basal keratinocytes with band-like lymphocytic infiltration on dermoepidermal junction (DEJ). Apoptotic keratinocytes also scattered in the epidermis (Fig e and f). Direct immunofluorescence of lesional skin showed linear deposition of C3 on basement

membrane zone (BMZ) but not immunoglobulin G (Fig g). While blood cell counts and biochemistry were within normal limit, serum anti-BP180 autoantibody increased to 37.6 index score (normal <9.0), but not other autoimmune antibodies including anti-nuclear antibody and anti-DNA antibody. Although these findings suggested the concomitance of both LP and bullous pemphigoid, the bullous lesions localizing only on LP lesions led to the diagnosis of BLP. Oral prednisolone (PSL) (0.5 mg/kg/day) succeeded in improving the eruption and titer of anti-BP180 autoantibody was gradually normalized. There was no recurrence of the lesion after tapering the dose.

Blistering variants of LP, BLP and LPP, can usually be differentiated clinically. However, the pathomechanism has not been fully elucidated. This case shows clinical features of BLP, and interestingly presented increased titer of anti-BP180 autoantibody, suggesting possible transition of BLP to LPP.

The detailed pathomechanism of LPP has not been fully elucidated. A dominant hypothesis is that exposure of autoantigen composing hemidesmosomal unit following persistent inflammatory reaction of LP on DEJ leads antibody production against BP180 [3, 4]. Repeated mechanical damage of BMZ can also relate to autoantibody production against hemidesmosome. In pemphigoid nodularis, repeated scratching because of persistent itch on pruriginous lesions can induce production of autoantibody against

BP180, resulting in subepidermal blister formation [5]. In this case, both persistent LP-related inflammation and mechanical stress due to hard scratching behavior might contribute the autoantibody production, and blister formation limited on preexisting LP lesions with elevation of serum anti-BP180 antibody suggests an intermediated stage of BLP and LPP.

While BLP and LPP can clinically be differentiated, this intermediate case of BLP with increased serum anti-BP180 autoantibody suggests possible transitional mechanism of BLP to LPP. Dermatologists should be aware that the part of BLP might be on the transitional way to LPP.

Reference

1. Inaloz, H.S., G. Patel, and P.J. Holt. Bullous lichen planus arising in the skin graft donor site of a psoriatic patient. *J Dermatol* **28**:43-6, 2001.

2. Maceyko, R.F., et al., Oral and cutaneous lichen planus pemphigoides. *J Am Acad Dermatol* **27**: 889-92, 1992.

3. Zillikens, D., et al., Autoantibodies in lichen planus pemphigoides react with a novel epitope within the C-terminal NC16A domain of BP180. *J Invest Dermatol* **113**:117-21, 1999.

4. Zaraa, I., et al., Lichen planus pemphigoides: four new cases and a review of the literature. *Int J Dermatol* **52**:406-12, 2013.

5. Cliff, S. and C.A. Holden, Pemphigoid nodularis: a report of three cases and review of the literature. *Br J Dermatol* 1997 **136**:398-401, 1997.

Figure legends

Clinical manifestation of the case (a-d). Arrows showed small tense bullae with edematous erythema (c). Histopathology showed apoptotic keratinocytes, vacuolar degeneration on dermoepidermal junction and band-like lymphocyte infiltration with pigment incontinence (e-f). Direct immunofluorescence of lesional skin showed linear deposition of C3 on basement membrane zone (g).

Scale bars: 200 μm (e), 50 μm (f) and 10 μm (g)