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Zosteriform Unilateral Linear Capillaritis

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Dear Editor:

Pigmented purpuric dermatoses (PPDs) are usually characterized by asymptomatic purpuric papules with pigmentation on the lower extremities[1]. However, these can also affect the trunk or upper extremities, and it rarely appears in linear or segmental distribution, known as unilateral linear capillaritis (ULC)[2]. Herein, we report a rare case of ULC that showed a zosteriform distribution on the trunk.

A 71-year-old male presented with a 6-month history of asymptomatic skin rashes spreading on his right trunk. We found multiple grouped erythematous to brownish papules and plaques with scattered petechiae along the right flank from the right abdomen (Fig. 1A). He had no traumatic history or preceding subjective symptoms. He did not have any particular medical history including cardiovascular diseases, prior use of anticoagulant drug such as aspirin, or similar family history. Laboratory evaluation showed no abnormality including complete blood count and coagulant factors. Skin biopsies revealed a band-like and perivascular infiltrate of lymphocytes with extravasation of erythrocytes in the upper dermis (Fig. 1B).

There are many subtypes of the PPDs, which include progressive pigmentary dermatosis, purpura annularis telangiectodes, pigmented purpuric lichenoid dermatosis of Gougerot and Blum, eczematoid-like purpura of Doucas and Kapetanakis, and lichen aureus. The most common type of PPDs is progressive pigmentary dermatosis, and its typical clinical features are asymptomatic irregularly shaped reddish-brown patches with pinhead-sized reddish puncta closely resembling "cayenne pepper" on the both lower extremities[1,3].

Unlike to common clinical features, PPD with a segmental distribution on the lower trunk was initially reported in 1990, and several cases had been reported previously that did not fit the typical fiver subtype of PPD, called ULC, which has been known a benign condition with a tendency to spontaneously regress[2]. In addition, several skin disorders with a zosteriform distribution including pro-

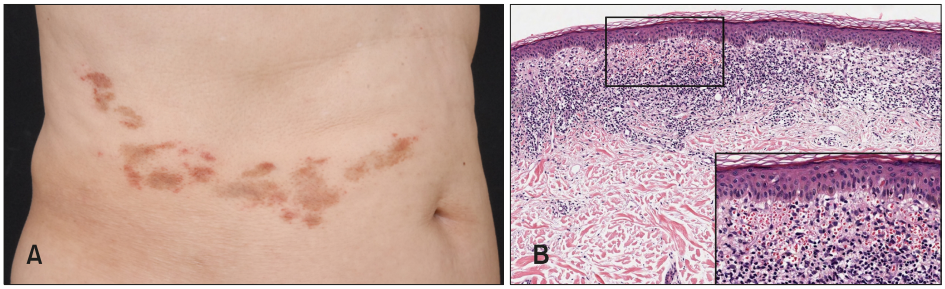

Fig. 1. Erythematous to brownish papules and plaques with scattered petechiae on the right trunk along dermatome of T9/T10 (A). Skin biopsies of samples from the right flank revealed a band-like and perivascular infiltrate of lymphocytes (B) and extravasation of erythrocytes in the upper dermis (in box). Original magnification ×200 and ×400 (H&E stain).

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Table 1. Differential clinical and pathologic diagnoses of skin disorder showing zosteriform eruption

Differential diagnose	Clinical feature	Pathologic feature
Zosteriform unilateral linear capillaritis (our case)	An asymptomatic multiple grouped erythematous to brownish pigmented papules and plaques with scattered petechiae along the dermatomes of trunk	A band-like and perivascular infiltrate of lymphocytes with extravasation of erythrocytes in the upper dermis
Progressive cribriform and zosteriform hyperpigmentation	A localized, uniform, tan cribriform macular pigmentation in a zosteriform distribution without prior rash, injury, or inflammation along the Blaschko's lines of trunk or extremities	An increase in basal layer pigmentation compared with adjacent normal skin; no nevus cell and no significant difference in the number of melanocytes between both area
Linear and whorled nevoid hypermelanosis	Similar to progressive cribriform and zosteriform hyperpigmentation, but diffuse streaks and whorls of hyperpigmentation composed of homogeneously colored macules along the Blaschko's lines of trunk or extremities	An increased basal layer pigmentation and prominence or vacuolization of melanocytes without pigment incontinence

gressive cribriform and zosteriform hyperpigmentation, and linear and whorled nevoid hypermelanosis have been reported, and differential clinical and pathologic diagnoses of those similar conditions were shown Table 1[4,5]. However, as in our case, zosteriform ULC, which was clinically similar to progressive pigmentary dermatosis, except that it had zosteriform distribution, has been rarely reported. Mar et al.[4] presented two pediatric cases of unilateral pigmented purpuric eruption involving the left abdomen, and Hamada et al.[2] described an adult case of PPD presenting with reddish-brown purpuric papules and plaques with tiny petechiae on the left lower abdomen and femoral regions having a zosteriform distribution of L1/L2. Similarly, our case showed erythematous to brownish papules and plaques with scattered petechiae on the right trunk along dermatomes of T9/T10, but it had more clinically distinct zosteriform distribution compared with previous ones.

In conclusion, it is important for dermatologists to consider that PPDs could be a skin disorder showing zosteriform eruption in rare cases. Additionally, it is necessary to reassure the patients regarding the progress of the disease, because ULC has a favorable prognosis, and it more commonly resolves spontaneously without any treatment than in the other subtypes of PPDs.

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CONFLICTS OF INTEREST

The authors have nothing to disclose.

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DATA SHARING STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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The First Case of Ustekinumab-Associated Hair Repigmentation and a Proposed Mechanism of Action

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Dear Editor:

While hair loss is a common side effect of many drugs, drug-associated repigmentation of hair is uncommon. To date, hair repigmentation associated with ustekinumab, an anti-interleukin (IL)-12/23 p40 monoclonal antibody, has not been described. We report the first case of ustekinumab-associated hair repigmentation.

A 52-year-old male, who had completely grey hair for 10 years, began ustekinumab treatment for psoriasis vulgaris. He presented to our clinic describing the return and regrowth of black hair in the temporal area after three months of initiating ustekinumab (two injections per protocol; Fig. 1A, B). He had a 20-year history of psoriasis. Upon physical examination, hair repigmentation was observed symmetrically across the temporal and posterior occipital regions. At the next follow-up, hair repigmentation appeared to have progressed with increased hair density (Fig. 1C), and a 75% improvement was achieved in the Psoriasis Area and Severity Index.

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Hair greying is a sign of aging in humans[1]. But the mechanism is not yet fully understood. Unlike white hair follicles that have no differentiated melanocytes, grey hair follicles have a reduced number of these cells in the hair bulbs, which indicates that greying hair has more reversible properties than white hair. Furthermore, several studies suggested that defective melanosomal transfer or melanin incontinence due to melanocyte degeneration may contribute to hair graying[2].

To date, hair color changes have been reportedly associated with several drugs, including brentuximab, nivolumab, secukinumab, and adalimumab[1].

Many authors who have reported drug-induced hair repigmentation propose that these drugs may inhibit anti-melanogenic cytokines, including tumor necrosis factor (TNF)-α, IL-1, and IL-6[1]. In this case, we propose two mechanisms that may trigger repigmentation: a direct mechanism and an indirect mechanism (Fig. 1D). First, ustekinumab may contribute to hair repigmentation through the inhibition of type 17 T helper (Th17) cells, which in turn inhibits the production of IL-6, an anti-melanogenic cytokine. IL-23, the target of ustekinumab, is involved in maintaining the effector function of Th17 cells, an important subtype that produces other inflammatory cytokines including IL-6[3]. Thus, ustekinumab, an anti-IL-12/23 p40 monoclonal antibody, may induce melanogenesis by inhibiting the anti-melanogenic cytokine, IL-6. Second, IL-23 may contribute more directly to melanogenesis. In a previous study, Nasti et al.[4] confirmed that normal melanocytes express both IL-12 and IL-23 receptors and suggested that IL-23 is associated with maintaining melano-