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BRIEF REPORT

Eosinophilic Annular Erythema Localized to the Palms and the Soles

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Dear Editor:

A 60-year-old man presented with erythematous to violaceous annular pruritic patches on both palms and soles for 2 weeks (Fig. 1A, B). No remarkable medical history was reported. Histopathological examination revealed perivascular and interstitial lymphohistiocytic infiltration with abundant eosinophils throughout the dermis and subcutaneous tissue but no flame figure (Fig. 1C). Oral prednisolone combined with cyclosporine was initiated and maintained for 1 month, but the response was poor. The patient never returned to the clinic.

The second case was a 52-year-old man with pruritic erythema on both palms and soles for 4 months. He had no history of either systemic disorder or allergy. Physical examination revealed ill-defined erythematous pruritic patches on the left palm (Fig. 2A). Histopathologically, a minimal vacuolar change at the dermoepidermal junction was observed. Dense perivascular infiltration with lymphohistiocytes and abundant eosinophils was also seen in the superficial and deep dermis (Fig. 2C, D). Neither flame

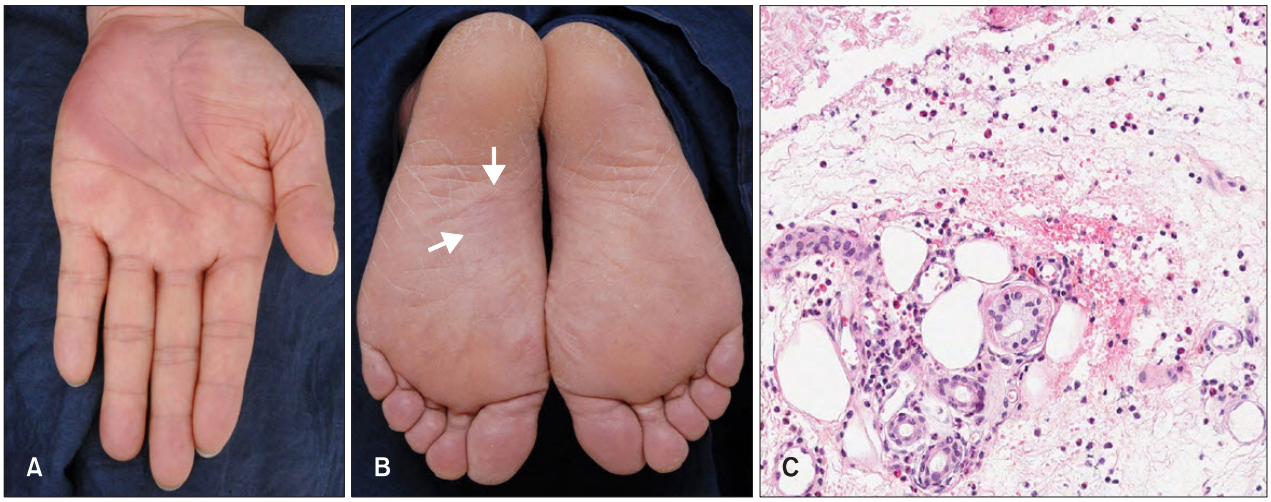

Fig. 1. Case 1. (A, B) Well-demarcated erythematous to violaceous annular pruritic patch on the left palm and both soles (white arrows). (C) An interstitial eosinophilic infiltration extending to the subcutaneous tissue (H&E, ×200).

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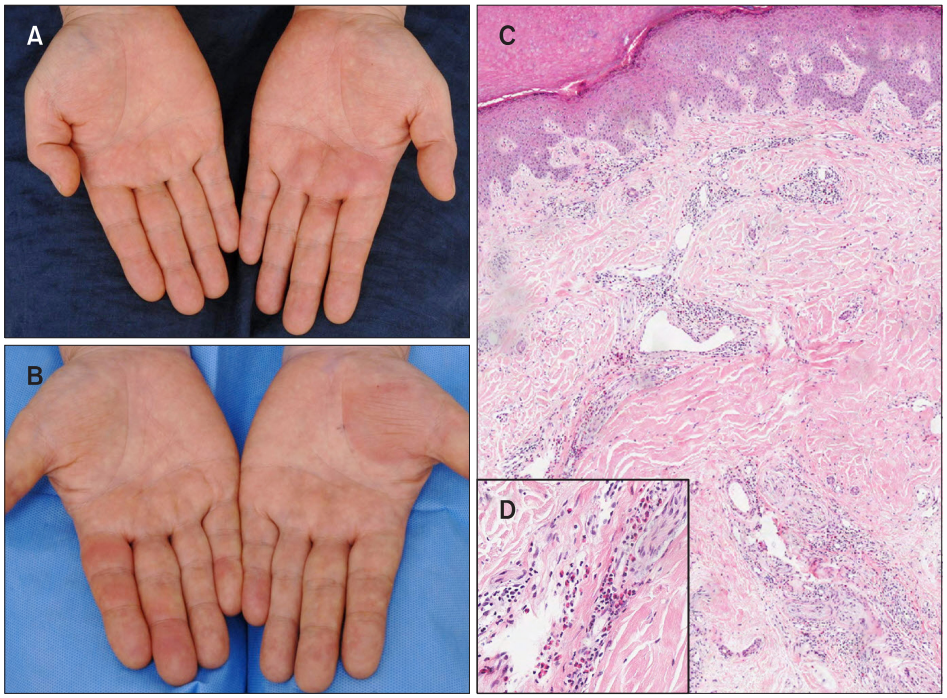

Fig. 2. Case 2. (A) Ill-defined erythematous pruritic patches on the left palm at the initial visit. (B) Aggravated lesion showing a larger and well-demarcated annular patch on the left palm after 9 months. (C, D) A dense perivascular infiltration with lymphohistiocytes and abundant eosinophils is visible in the dermis (H&E; C: ×100, D: ×200).

figure nor multinucleated giant cell was observed. Laboratory test results were normal, including eosinophils (0.7%). Systemic and topical steroids with cyclosporine were administered for 9 months but resulted in only transient improvement. Also, the lesion was getting larger and showed a well-demarcated annular feature (Fig. 2B). Therefore, hydroxychloroquine (400 mg daily) was added to oral prednisolone and the skin lesions improved rapidly within a week. There was no remarkable aggravation for 5 months.

Eosinophilic annular erythema (EAE) is a rare figurate erythema that was first described in 2000[1]. According to El-Khalawany et al.[2], erythematous small plaques (<5 cm in diameter) in the early clinical stage become larger and more annular in the well-developed stage. Long-standing lesions show pigmented atrophic centers with elevated borders (>10 cm in diameter). Histopathologically, perivascular eosinophilic infiltration is characteristic and becomes more prominent as the lesion develops. EAE is typically known to lack flame figures histopathologically and blood eosinophila (>7%) in laboratory tests, which are hallmarks of Well's syndrome (WS). Clinically, more prominent gyrate erythema is observed compared to WS, and findings such as prodromal burning, painful edema and peripheral induration are absent unlike WS[2]. However, cases of EAE with flame figures histopathologically along with blood eosinophilia have been reported. Also, well-developed and long standing lesions of EAE are highly compatible with WS[2]. Therefore, EAE is suggested as a subset of WS[2,3].

EAE shows an excellent response to antimalarials (chloroquine and hydroxychloroquine) unlike classic WS, in which systemic steroid is most effective[4]. Therefore, antimalarials are suggested as the drug of choice in EAE, and minocyclines, cyclosporine, and dapsone as alternatives[2,3]. EAE generally involves trunk or extremities. A case of EAE limited to palms and soles that showed similar features to our cases was recently reported[5]. That case was associated with thymoma, although the pathogenetic correlation between them was unclear. The case of Iga et al.[5] and our cases suggest that EAE migrating mainly to palms and soles may be a unique clinical spectrum of EAE. In addition, hydroxychloroquine with prednisolone is suggested to be first-line treatment for EAE localized to palms and soles.

REFERENCES

1. Kahofer P, Grabmaier E, Aberer E. Treatment of eosinophilic annular erythema with chloroquine. Acta Derm Venereol 2000;80:70-71.
2. El-Khalawany M, Al-Mutairi N, Sultan M, Shaaban D. Eosinophilic annular erythema is a peculiar subtype in the spectrum of Wells syndrome: a multicentre long-term follow-up study. J Eur Acad Dermatol Venereol 2013;27:973-979.
3. Rongioletti F, Fausti V, Kempf W, Rebora A, Parodi A. Eosinophilic annular erythema: an expression of the clinical

and pathological polymorphism of Wells syndrome. J Am Acad Dermatol 2011;65:e135-e137.
4. Mebazaa A, Kenani N, Ghariani N, Denguezli M, Sriha B, Belajouza C, et al. Eosinophilic annular erythema responsive to chloroquin. Eur J Dermatol 2009;19:84-85.
5. Iga N, Otsuka A, Kaku Y, Miyachi Y, Kabashima K. Eosinophilic annular erythema limited on the palms and the soles and possibly associated with thymoma. J Eur Acad Dermatol Venereol 2016;30:1213-1214.

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Protease-Activated Receptor-2: A Multifaceted Molecular Transducer in the Human Skin

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Dear Editor:

In the last issue of *Annals of Dermatology*, an exploratory study on the role of protease-activated peceptor-2 (PAR-2) in human skin was published by Shin et al.[1]. In consideration of the assumed impact of PAR-2 in a variety of normal physiological processes as well as pathophysiological conditions[2], this is considered a timely and contributive study.

In the study, Shin et al.[1] detected a high expression of PAR-2, particularly in the stratum granulosum of normal human skin, as well as in the acrosyringium of the eccrine sweat glands, while PAR-2 immunoreactivity was weak in the granular layer of the palmar epidermis. This is a highly interesting observation considering the established somatosensory role of the PAR-2. In the skin, the PAR-family and PAR-2 in particular, is richly expressed on cutaneous primary sensory afferent nerve terminals known to convey the sensation of pruritus. These PAR-2-positive fibers are shown to be densely innervating the granular layer of non-glabrous skin. In a number of *in vivo* and human psychophysical studies, PAR-2 and its co-effector transient receptor potential cation channel A1 (TRPA1) has been associated with the non-histaminergic pruritic pathway wherein superficial polymodal c-fibers transmits the sensation of itch in response to a number of chemical stimuli, including mucunain, tryptase and the agonist applied in Shin et al.'s study[1]; SLIGRL-NH2[3]. Activity in the non-histaminergic pathways of itch is thought to be a substantial contributor to the chronic itch associated with prevalent conditions such as atopic dermatitis and psoriasis, and the main reason that the itch accompanying with these conditions respond poorly to antihistamines. Steinhoff et al.[4] (2003) have directly associated PAR-2-signalling with the occurrence of treatment resistant itch in atopic dermatitis and conclude that the receptor is likely to contribute to exacerbate the ongoing inflammatory processes directly by pro-inflammation and indirectly by induction of scratching.

Additionally, Shin et al.[1] found that human epidermal keratinocytes (SV-HEKs), which were fully differentiated displayed significantly higher PAR-2 expression than undifferentiated keratinocytes, which is in accordance with similar previous findings. This corresponds well with the

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