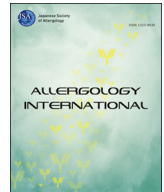




Contents lists available at ScienceDirect

Allergy International

journal homepage: <http://www.elsevier.com/locate/alit>

Letter to the Editor

Three cases of adult-onset atopic dermatitis after hematopoietic stem cell transplantation

Dear Editor,

Atopic dermatitis (AD) is a chronic, eczematous, severely pruritic skin disorder mostly associated with IgE elevation and skin barrier dysfunction. Both genetic and environmental factors are considered to be involved in its pathogenesis. Considering that T-cell-mediated immune response is one of the main pathological conditions of AD, atopy can be transmitted to an individual via hematopoietic stem cell transplantation (HSCT).

Here, we report three cases of adult-onset AD after HSCT.

Case 1: A 42-year-old woman presented with itchy, symmetrical, erythematopapular skin lesions on her face, neck, trunk, and extremities (Fig. 1A). She had suffered from acute myeloid leukemia and undergone cord blood stem cell transplantation (CBSCT) one year before the onset of the skin lesions. She and her family had no medical history of atopy. Her serum IgE level was 341 IU/mL and serum TARC level was 976 pg/mL. The histology of the lesions showed features of chronic eczema. The epidermal changes included hyperkeratosis, parakeratosis, focal spongiosis, and acanthosis. In the dermis, perivascular lymphocytic infiltration was observed with scattered eosinophils (Fig. 1B). From the clinical and histological findings, we diagnosed her with AD after HSCT.

Case 2: A 54-year-old woman presented with pruritus and symmetrical erythema on her face, trunk, and flexural surfaces of the arms (Fig. 1C). She had undergone allogeneic bone marrow transplantation (BMT) to treat myelodysplastic syndrome (MDS) 100 days before the skin lesions occurred. She and her family had no medical history of atopy. Her serum IgE level was 40 IU/mL and serum TARC level was 241 pg/mL. On histological analysis, epidermal hyperkeratosis, acanthosis, and spongiosis were seen with perivascular infiltration of lymphocytes and eosinophils, leading to a diagnosis of AD (Fig. 1D).

Case 3: A 28-year-old man with MDS underwent CBSCT. Six months later, erythema appeared on his face and spread to the trunk and flexural surfaces of the arms and legs

(Fig. 1E). He had no past history of AD, but his brother had AD. He was also clinically diagnosed with AD. His serum TARC level was 954 pg/mL.

A total of seven cases (including these three of our own) of AD have been reported to have developed after HSCT.^{1–4} None of them had any personal history of AD. These results suggest that hematopoietic cells from donors can trigger the onset of AD in HSCT recipients. Although the levels of total IgE were slightly high or within the normal range in these seven cases, similar allergen-specific IgE has been detected in both donors and recipients in some cases.^{3,5} The occurrence of skewing to a type 2 immune response was also supported by the elevated TARC levels seen in cases 1 and 3. As Bellou *et al.*³ suggested, allostimulation of donors' T cells by recipient cells may enhance or facilitate the type 2 deviation and type 2 immune milieu (preponderance of interleukin-4 and interleukin-13) initiating the development of AD. In some cases, like in case 3 presented here, recipient atopic diathesis may be exacerbated by allostimulation via donor hematopoietic cells.

Graft-versus-host disease (GVHD) is the most important differential diagnosis. A lack of histological interface dermatitis and individual cell necrosis helps to achieve a correct diagnosis of AD rather than GVHD. We treated our patients with emollients and topical steroid, which led to rapid improvement of all of the skin lesions.

Conflict of interest

The authors have no conflict of interest to declare.

Nobutoshi Take^a, Takeshi Nakahara^{a,b,*}, Makiko Kido-Nakahara^a, Masataka Furue^{a,b,c}

^a Department of Dermatology, Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan

^b Division of Skin Surface Sensing, Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan

^c Research and Clinical Center for Yusho and Dioxin, Kyushu University Hospital, Fukuoka, Japan

* Corresponding author. Department of Dermatology, Graduate School of Medical Sciences, Kyushu University, 3-1-1 Maidashi, Higashi-ku, Fukuoka, 812-8582, Japan. E-mail address: nakahara@dermatol.med.kyushu-u.ac.jp (T. Nakahara).

Peer review under responsibility of Japanese Society of Allergy.

<https://doi.org/10.1016/j.alit.2018.04.002>

1323-8930/Copyright © 2018, Japanese Society of Allergy. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

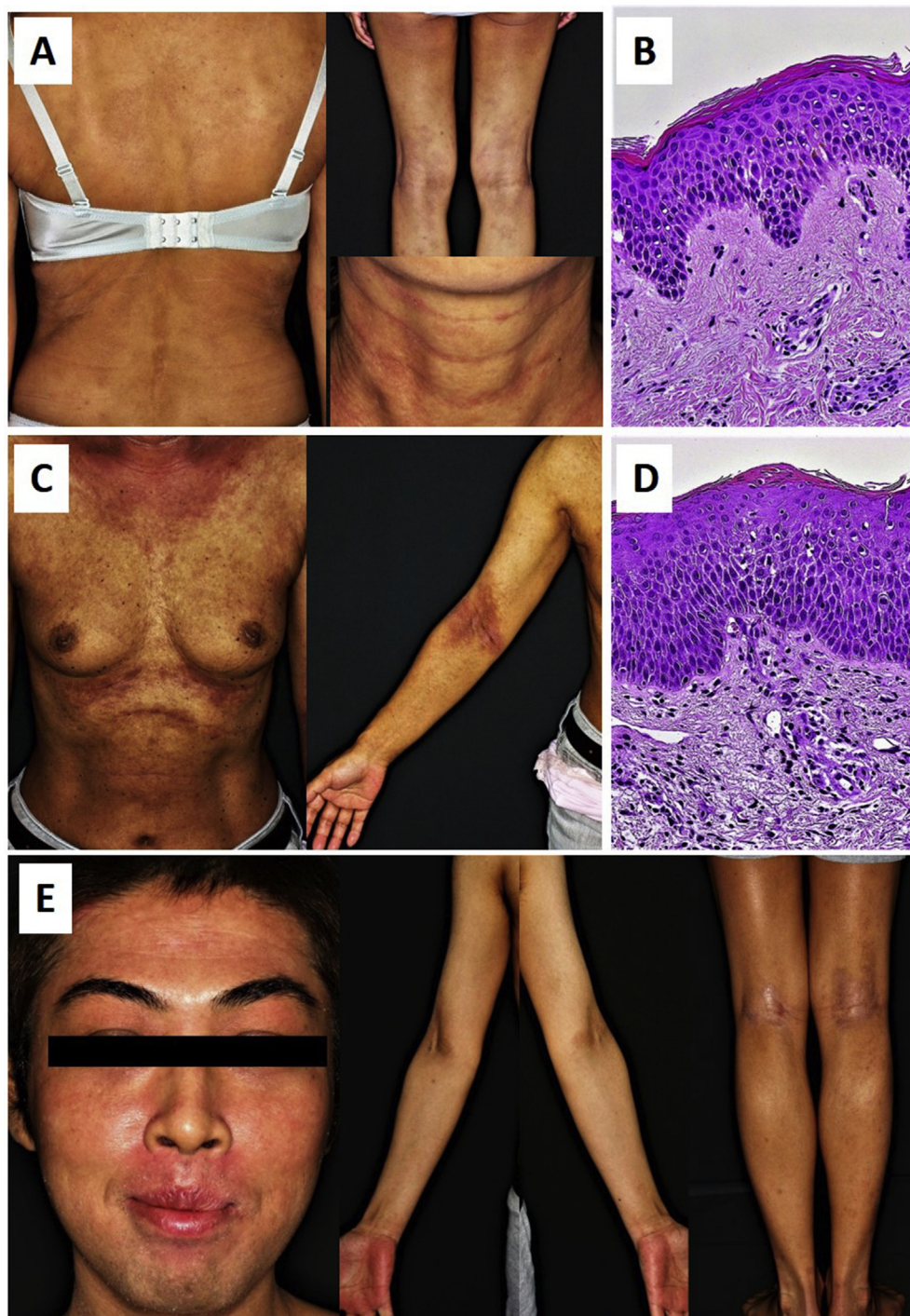


Fig. 1. Clinical appearance and histological findings of the patients. (A) Lesions of neck, back, and limbs of case 1. Erythema, papules, scaling, and dry skin were seen. (B) Histological findings of skin lesions from case 1. The epidermal changes included hyperkeratosis, parakeratosis, focal spongiosis, and acanthosis. Perivascular lymphocytic infiltration with scattered eosinophils was seen in the dermis. (C) Symmetrical erythema and lichenified eczematous lesions were observed on the trunk and flexural surfaces of the arms in case 2. (D) Histological findings of skin lesions from case 2. Epidermal hyperkeratosis, acanthosis, and spongiosis were seen with perivascular infiltration of lymphocytes and eosinophils. (E) Erythema appeared on the face and flexural surfaces of the arms and legs in case 3.

References

1. Saarinen UM. Transfer of latent atopy by bone marrow transplantation? A case report. *J Allergy Clin Immunol* 1984;**74**:196–200.
2. Desai S, Walker SA, Shaw PJ, Richs PJ, Hobbs JR, Wild G, et al. Expression of donor allergic response patterns by bone marrow transplant recipients. *Lancet* 1984;**17**:1148.
3. Bellou A, Kanny G, Fremont S, Moneret-Vautrin DA. Transfer of atopy following bone marrow transplantation. *Ann Allergy Asthma Immunol* 1997;**78**:513–6.
4. Tanaka M, Konishi S, Yoshida Y, Furumura M, Urabe K, Koga K, et al. [Three cases of atopic dermatitis like lesion or relapse of atopic dermatitis after bone marrow transplantation for leukemia in childhood]. *Hifu no Kagaku* 2002;**1**:57–60 (in Japanese).
5. Agosti JM, Sprenger JD, Lum LG, Witherspoon RP, Fisher LD, Storb R, et al. Transfer of allergen-specific IgE-mediated hypersensitivity with allogeneic bone marrow transplantation. *N Engl J Med* 1988;**319**:1623–8.

Received 27 March 2018

Received in revised form 2 April 2018

Accepted 5 April 2018

Available online xxx