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Recall dermatitis at patch test sites in an atopic dermatitis patient treated with dupilumab

Cristina Collantes-Rodríguez  | David Jiménez-Gallo | Lidia Ossorio-García |
Isabel Villegas-Romero | Mario Linares-Barrios

Unidad de Gestión Clínica de Dermatología, Hospital Universitario Puerta del Mar, Cádiz, Spain

Correspondence

Cristina C. Rodríguez, Department of Dermatology, Hospital Universitario Puerta del Mar, Avda Ana de Viya 21, 11009, 0034-637-712-270, Cádiz, Spain.
Email: cris.collantes.rguez@gmail.com

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The term recall dermatitis is used for inflammatory skin reactions at sites previously irradiated after pharmacological therapy for various malignancies, but it has also been reported after patch testing and repeated exposures to the allergen.¹ We report a case of a patient with allergic contact dermatitis (ACD) caused by colophonium and underlying atopic dermatitis who developed recall dermatitis at patch test sites after dupilumab injection.

CASE REPORT

A 42-year-old woman consulted with a 40-year history of severe atopic dermatitis affecting her face, neck, trunk, and extremities. She also had a history of asthma and mite allergy, but was not taking any medication for this. She presented with worsening of eczema on the hands and arms. As ACD was suspected, a patch test (TRUE Test) was applied on the back for 2 days under occlusion, and readings were performed on day (D) 3 and D7 according to ESCD guidelines. The patient showed a positive reaction to colophonium 1200 µg/cm² (+++/+++). Clinical relevance was established, as the patient reported having stopped applying depilatory wax and some dressings because of eczema.

Given the severity of her atopic dermatitis, our patient had previously been treated with methotrexate, oral corticosteroids, and ciclosporine, without good response. Finally, she was started on dupilumab 300 mg every other week 5 months after patch testing. Surprisingly, she developed erythema and infiltration on the skin of her back where the colophonium patch test and the colophonium-containing bandage, respectively, had been applied (Figure 1) 24 hours after the first dupilumab injection. The cutaneous reaction persisted and diminished as the days went by; however, it worsened again after the next dupilumab dose. The reactions after the next doses were weaker, and only erythematous. After the fifth injection, the patient no longer showed

new flare-up reactions. A diagnosis of recall dermatitis at patch test sites triggered by dupilumab was made. On recent follow-up, the patient had received a total of 10 dupilumab doses, with good control of her atopic dermatitis, although some lichenification plaques persist on the arms.

DISCUSSION

Dupilumab, a fully human monoclonal antibody that was recently approved for severe atopic dermatitis treatment, is directed against the shared α subunit of the interleukin (IL)-4 receptors, and blocks signalling from both IL-4 and IL-13, which are key drivers of T helper (Th) type 2 cell-mediated diseases, such as asthma and atopic dermatitis.² ACD is a T cell-mediated delayed-type hypersensitivity reaction, and includes: a sensitization phase, which is generally asymptomatic; an elicitation phase, with manifestation of the disease; and finally, a recovery phase leading to a clinically normal skin.³ During elicitation, various interferon-γ-inducible chemokines are expressed, correlating with the recruitment of Th1 cells to the site of allergen contact.

Recurrent dermatitis at previously sensitized areas after patch testing following re-exposure to new sites has been reported.⁴ The local retention of effector memory T cells at sites previously challenged by ACD could be responsible for phenomena such as local skin memory observed in retest reactions, flare-up reactions, and “recall dermatitis”, in which the presence of persisting T cells results in an inflammatory response after a new exposure to the same allergen.³ We hypothesize that, in the case of our patient with a previous positive patch test reaction to colophonium, dupilumab acted by inhibiting Th2 cell signalling through IL-4 receptor α blockade, which, in turn, may have exacerbated the immune response mediated by effector



FIGURE 1 Erythema and induration on the skin in contact with the colophonium patch test allergen and the colophonium-containing bandage in a patient with atopic dermatitis treated with dupilumab. Urticarial dermographism can be seen in the lower part of the picture

memory Th1 cells at the site of colophonium contact, leading to recurring recall dermatitis.

ORCID

Cristina Collantes-Rodríguez  <http://orcid.org/0000-0002-9855-1104>

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